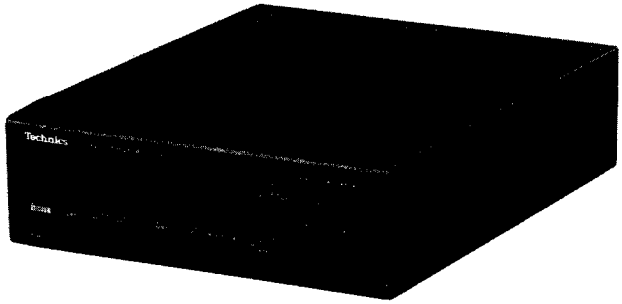
Service Manual

QUARTZ Synthesizer
LW/MW/FM Stereo Tuner

MW/FM Stereo Tuner

Tuner

ST-CH9L
ST-CH9



Color

(K)	Black Type
(H)	Gray Type

Area

Country Code	Areas	Color
(E)	Continental Europe	(K)
(EI)	Italy	
(EB)	Great Britain	(H)

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

System: SC-CH9

SPECIFICATIONS
(DIN 45 500)

■ **FM TUNER SECTION**

Frequency range	87.50~108.00 MHz (0.05 MHz step)
Sensitivity	1.5 µV (IHF, usable)
S/N 30 dB	1.3 µV (75Ω)
S/N 26 dB	1.2 µV (75Ω)
S/N 20 dB	0.9 µV (75Ω)
IHF 46 dB stereo quieting sensitivity	28 µV (75Ω)
Total harmonic distortion	
MONO	0.15%
STEREO	0.3%
S/N	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Frequency response	
For Italy:	20 Hz~15 kHz, +0.5 dB~−2.0 dB
For others:	20 Hz~15 kHz, +0.5 dB~−1.5 dB
Alternate channel selectivity ±400 kHz	
For Italy:	70 dB
For others:	50 dB
Stereo separation 1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	
For Italy:	−65 dB (−70 dB, IHF)
For others:	−30 dB (−35 dB, IHF)
38 kHz	
For Italy:	−55 dB (−60 dB, IHF)
For others:	−45 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	
For Italy:	±1.2 dB
For others:	±1.5 dB
Limiting point	
For Italy:	1.0 µV
For others:	1.2 µV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 ohms (unbalanced)

■ **LW/MW TUNER SECTION**

Frequency range	
MW	522~1611 kHz (9 kHz-step)
	530~1620 kHz (10 kHz-step)
LW	155~353 kHz (9 kHz-step)
	153~351 kHz (−2 kHz-shift)
Sensitivity (S/N 20 dB)	
MW	20 µV, 300 µV/m
LW	50 µV
Selectivity (±9 kHz)	
MW	(at 999 kHz) 50 dB
LW	(at 254 kHz) 50 dB
Image rejection	
MW	(at 999 kHz) 40 dB
LW	(at 254 kHz) 40 dB
IF rejection	
MW	(at 999 kHz) 60 dB
LW	(at 254 kHz) 60 dB

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

■ TIMER SECTION

Clock	Quartz-lock type 24-hour indication
Functions	24-hour programmable; weekly (1 setting) once only (1 setting) sleep (10~60 min., 10-min. intervals)
Setting intervals	1 minute~23 hours, 59 minutes (at 1 min. intervals)

■ GENERAL

Power consumption	9 W (Standby 6 W)
Power supply	
For Continental Europe:	AC 50 Hz/60 Hz, 220 V
For others:	AC 50 Hz/60 Hz, 240 V
Dimensions (W×H×D)	215×71×287 mm ($8^{15}/_{32}$″×$2^{13}/_{16}$″×$11^{5}/_{16}$″)
Weight	1.5 kg (3.3 lb.)

Notes:

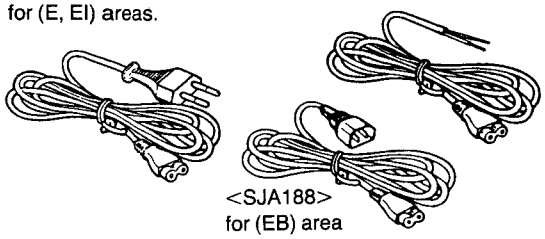
1. Total harmonic distortion in measured by the digital spectrum analyzer.
2. Specifications are subject to change without notice.
3. Weight and dimensions shown are approximate.

■ CONTENTS

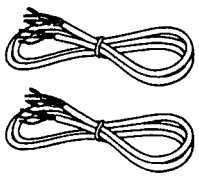
	Page
ACCESSORIES	2
HOW TO INSTALL THE SYSTEM	3
CONNECTIONS	4, 5
LOCATION OF CONTROLS	6
DISASSEMBLY INSTRUCTIONS	7
MEASUREMENTS AND ADJUSTMENTS	8, 9
DESCRIPTION OF FL PANEL	10
BLOCK DIAGRAM (for ST-CH9L)	11, 12
PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (for ST-CH9L)	13, 14
SCHEMATIC DIAGRAM (for ST-CH9L)	15~18
BLOCK DIAGRAM (for ST-CH9)	19, 20
PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (for ST-CH9)	21, 22
SCHEMATIC DIAGRAM (for ST-CH9)	23~26
FUNCTIONS OF IC TERMINALS	27
REPLACEMENT PARTS LIST	28~31
EXPLODED VIEW	32
PACKING (for System: SC-CH9)	33, 34

■ ACCESSORIES

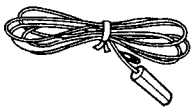
- AC power supply cords (two)
  <SFDAC05E03>×2 for (E, EI) areas.
  <SJA193> for (EB) area
  <SJA188> for (EB) area



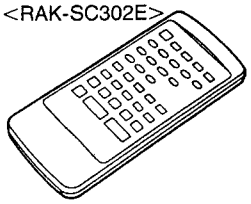
- Speaker cords (two) <REC201A25Q>



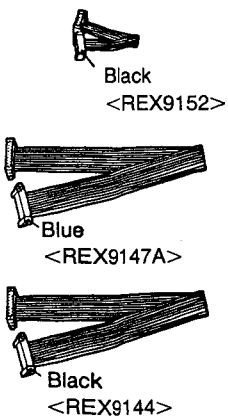
- FM indoor antenna (one) <SSA270M>



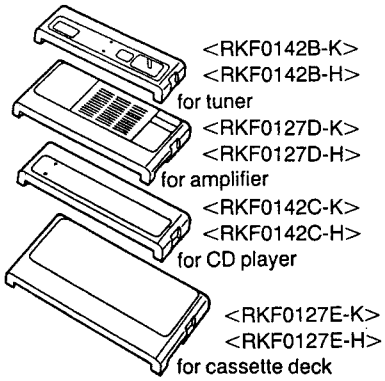
- Remote control transmitter <RAK-SC302E>



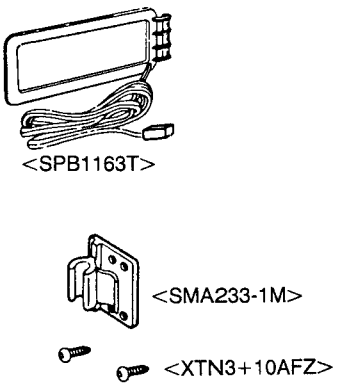
- Flat cables (three)
  Black <REX9152>
  Blue <REX9147A>
  Black <REX9144>



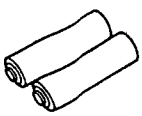
- Back cover (four)
  <RKF0142B-K> <RKF0142B-H> for tuner
  <RKF0127D-K> <RKF0127D-H> for amplifier
  <RKF0142C-K> <RKF0142C-H> for CD player
  <RKF0127E-K> <RKF0127E-H> for cassette deck



- LW/MW loop antenna (one) and Antenna holder (one) and mounting screws (two)
  <SPB1163T>
  <SMA233-1M>
  <XTN3+10AFZ>



- Remote control batteries (two) (UM-4, "AAA", R03)

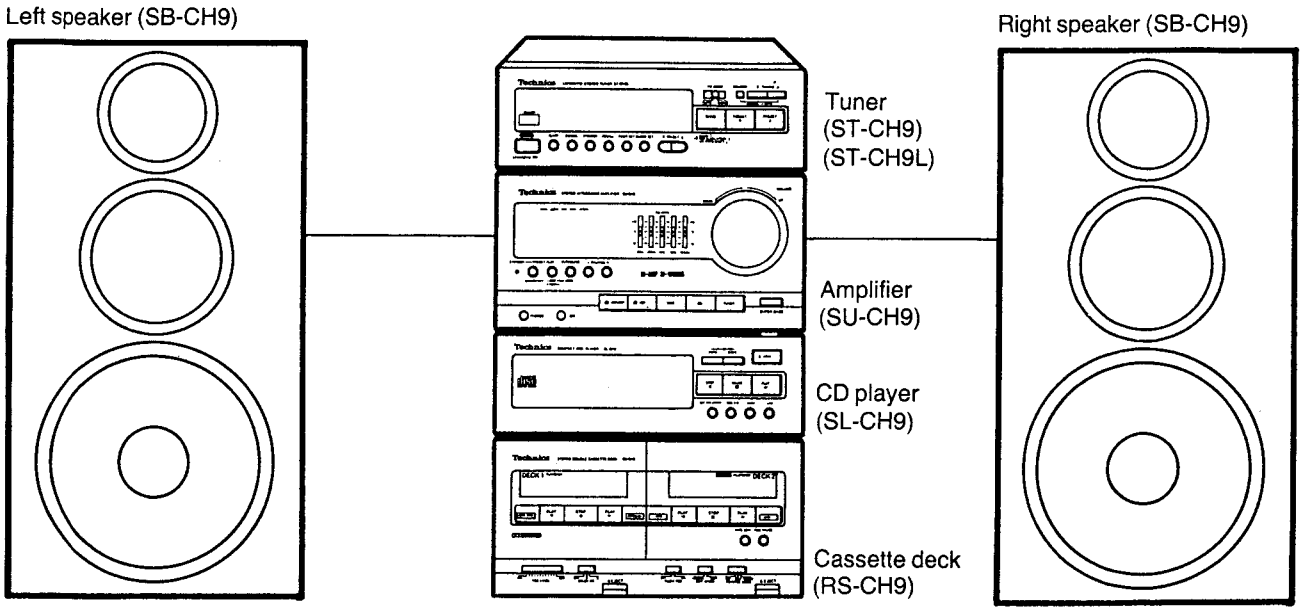


- Headphones cord clamp (one) <RMQ0173>

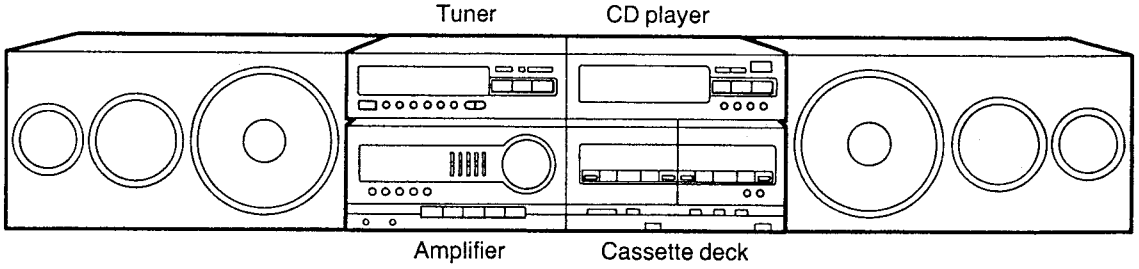
- Attachment plug...for (EB) area (one) <SJP9009>

■ HOW TO INSTALL THE SYSTEM

Install the various components as shown in the figure.

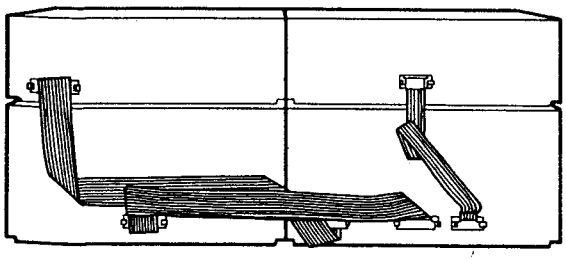


Installing the components horizontally



Areas	System	Tuner	Amplifier	CD player	Cassette deck	Speakers
(E, EB)	SC-CH9	ST-CH9L	SU-CH9	SL-CH9	RS-CH9	SB-CH9
(EI)		ST-CH9				

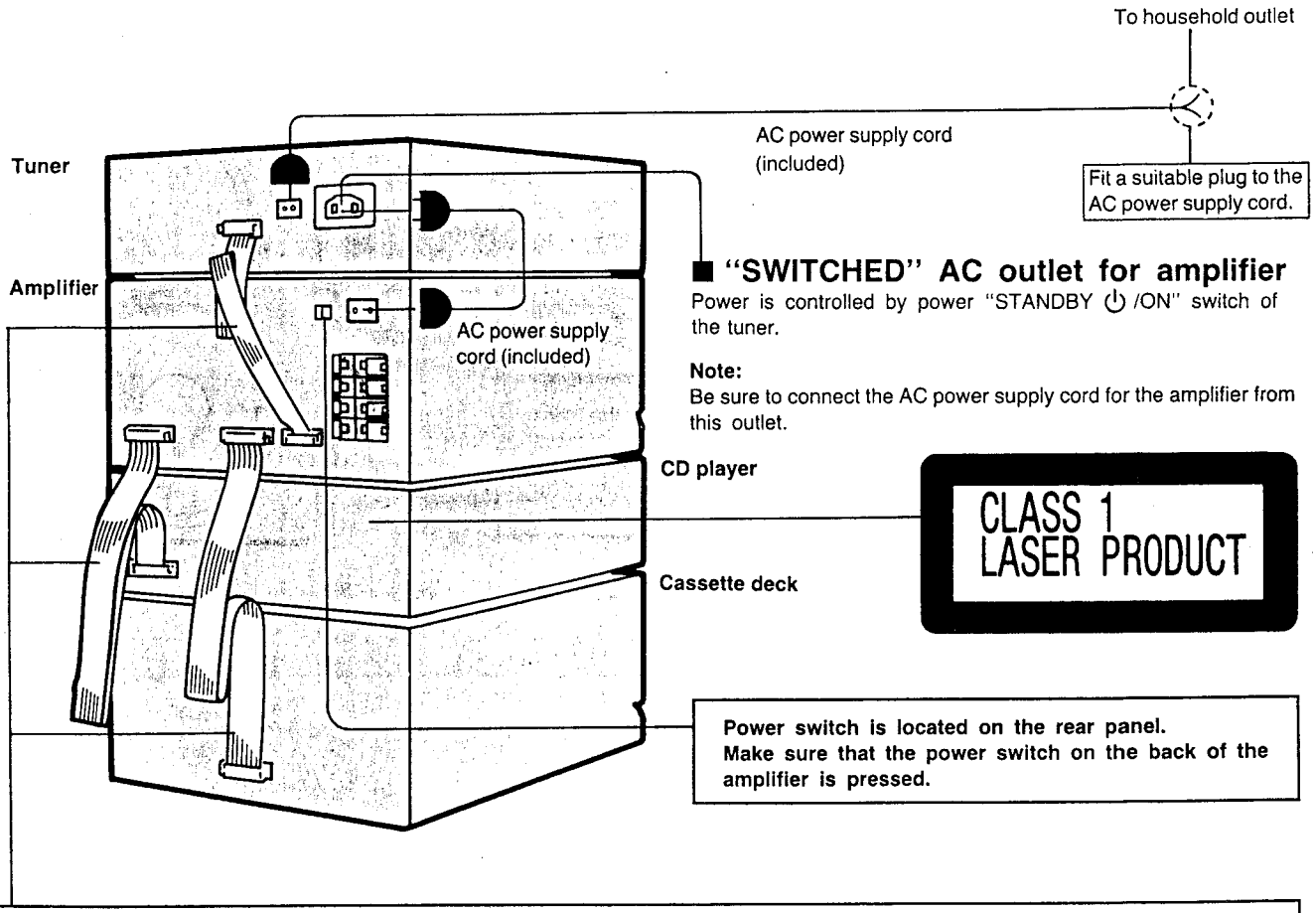
When installing the components horizontally,
fold the flat cable as shown in the figure below.



■ CONNECTIONS

Connect the power cord

Connect the AC power supply cords after all other cables and cords are connected and the back covers are installed.


To household outlet
AC power supply cord (included)
Fit a suitable plug to the AC power supply cord.
Tuner
Amplifier
AC power supply cord (included)
CD player
Cassette deck
CLASS 1
LASER PRODUCT
Power switch is located on the rear panel.
Make sure that the power switch on the back of the amplifier is pressed.

■ "SWITCHED" AC outlet for amplifier

Power is controlled by power "STANDBY ⏻ /ON" switch of the tuner.

Note:
Be sure to connect the AC power supply cord for the amplifier from this outlet.

Connect the flat cable

From amplifier to tuner

(Black) (Black)

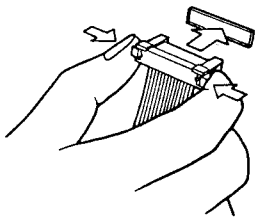
From amplifier to CD player

(Black) (Black)

From amplifier to cassette deck

(Blue) (Blue)

Hold the connector with the recessed part uppermost.



- The white line is at the right.
- Refer to page 3 for the method of connecting the flat cable when installing the components horizontally.

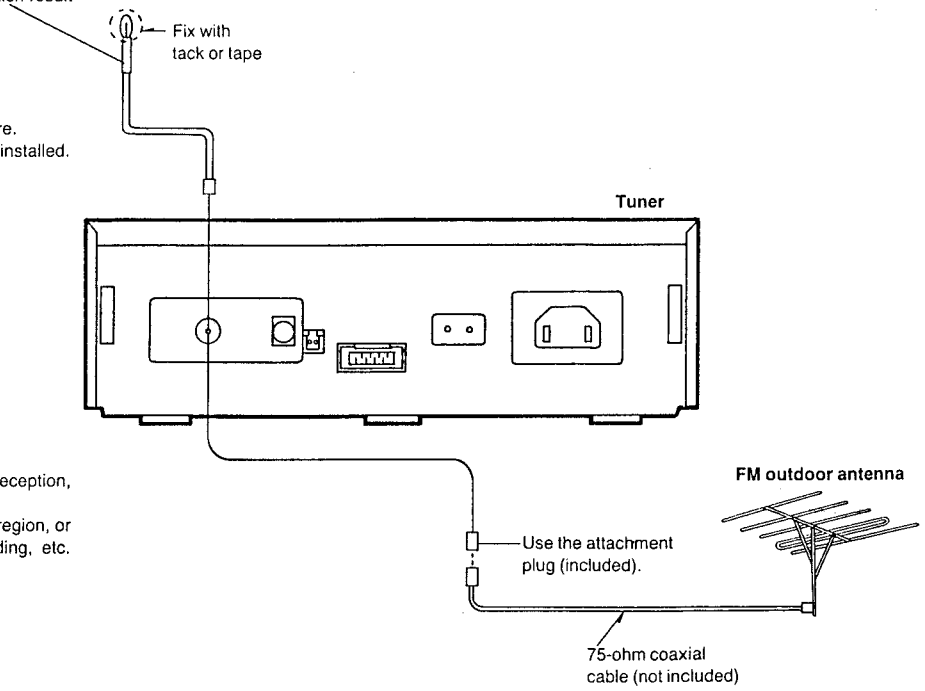
Connect the FM antenna

■ FM indoor antenna (included)

Install this antenna on a wall at a height and direction which result in best reception.

For best reception sound quality:
An FM outdoor antenna is recommended.

- The tack should not contact the internal antenna wire.
- Disconnect the antenna if an FM outdoor antenna is installed.



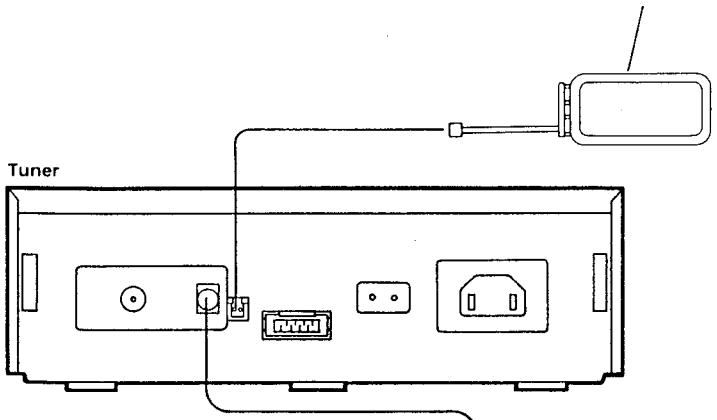
■ FM outdoor antenna (not included)

If the FM indoor antenna does not provide satisfactory reception, an outdoor antenna should be used.
The outdoor antenna may be required in a mountainous region, or if this unit is located inside a reinforced-concrete building, etc.

Connect the LW/MW antenna

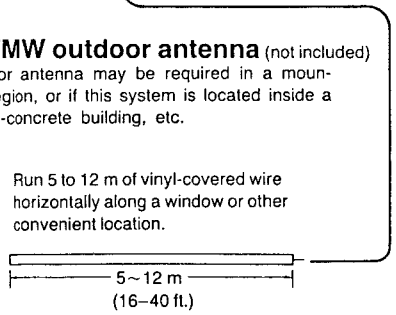
■ LW/MW loop antenna (included)

Mount the antenna on a wall or the backcover of the tuner at a height and direction which result in best reception.

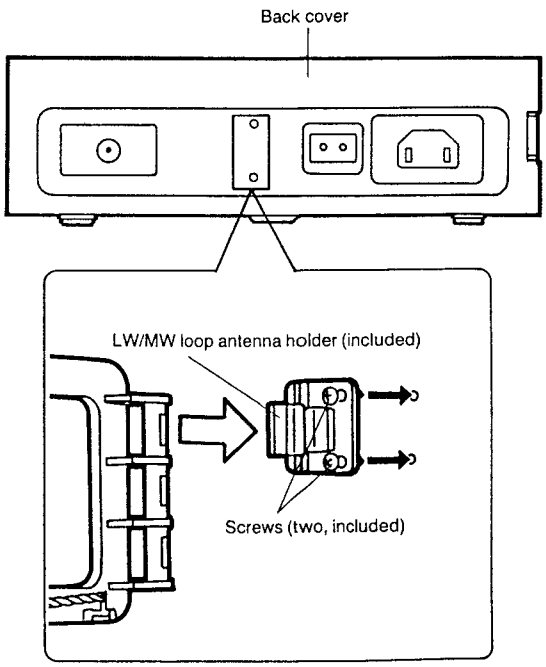


■ LW/MW outdoor antenna (not included)

An outdoor antenna may be required in a mountainous region, or if this system is located inside a reinforced-concrete building, etc.



How to install the LW/MW loop antenna



LW/MW loop antenna

- If this antenna is not connected, LW/MW broadcasts will not be received. Be sure to connect the LW/MW loop antenna even when an outdoor antenna is used.
- To minimize noise pickup, keep the loop antenna away from the speaker cord, power cord and metal surfaces.

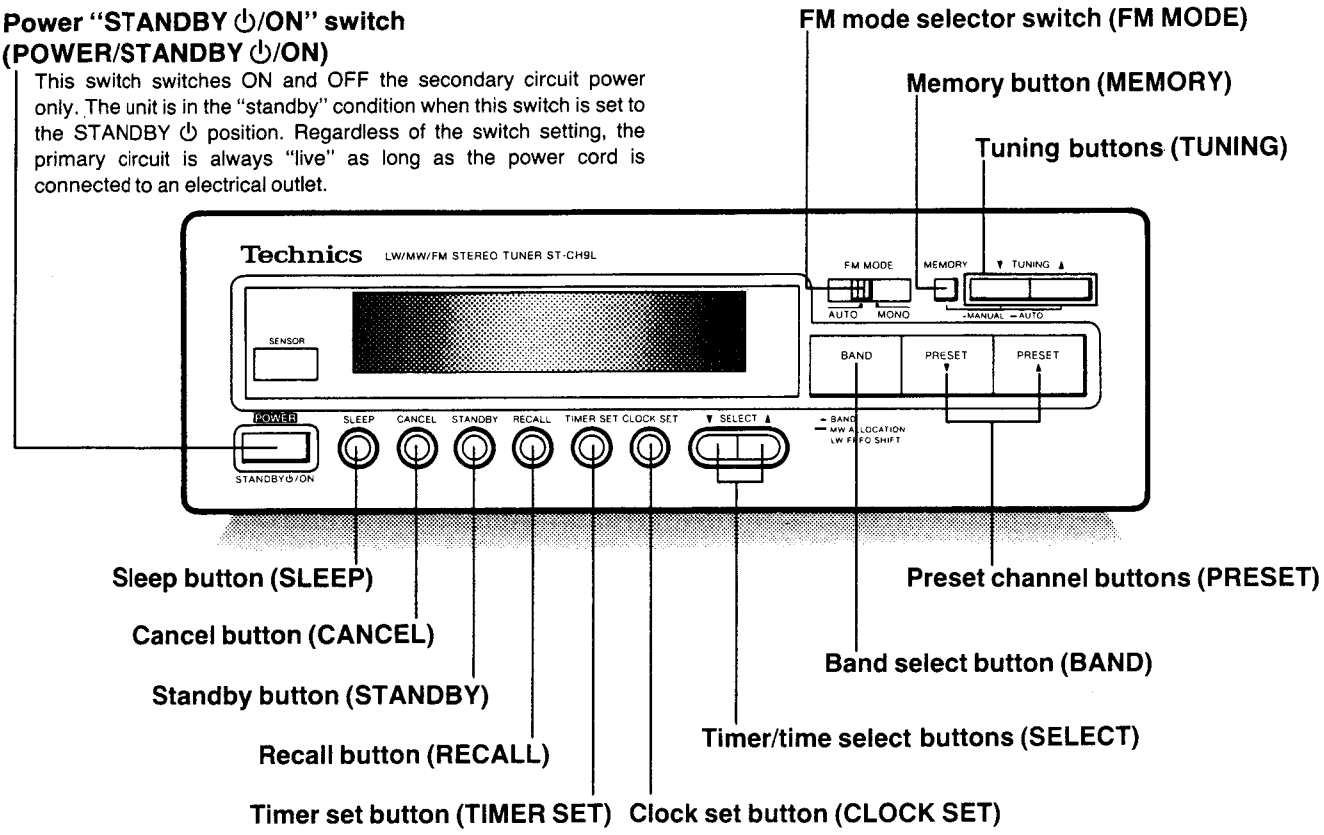
MC-Service

■ LOCATION OF CONTROLS

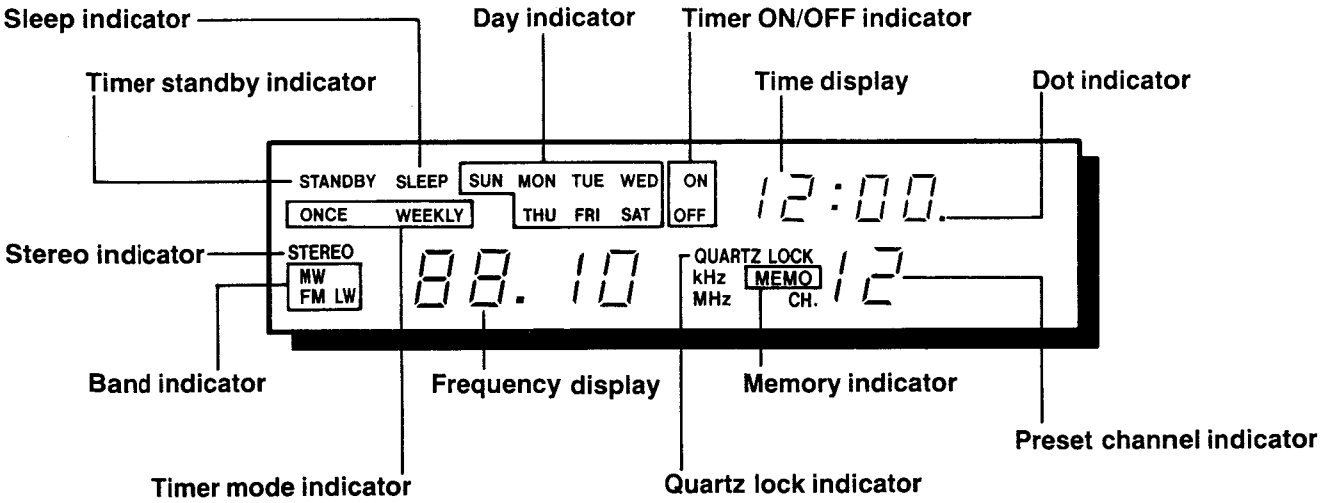
Tuner/Timer

Power "STANDBY ⏻/ON" switch (POWER/STANDBY ⏻/ON)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the STANDBY ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.



■ Display



Memory button
Press the memory button when you wish to memorize a broadcasting station.

Preset channel buttons
Press this button to set a broadcast in the manual memory, or to select a memorized broadcast station.

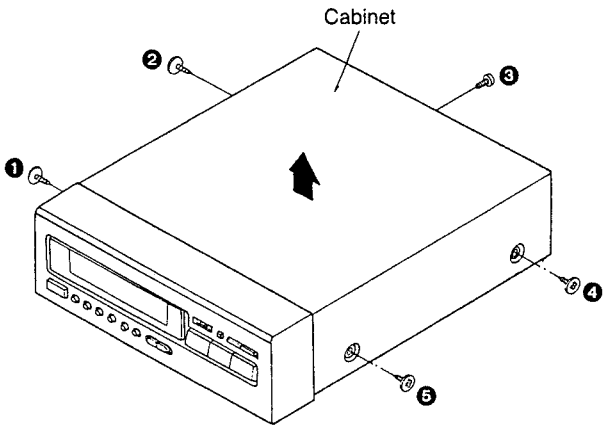
Dot indicator
This indicator flashes to indicate that the clock is working.

Quartz lock indicator
This indicator indicates that the frequency of the broadcast station is being received correctly.

■ DISASSEMBLY INSTRUCTIONS

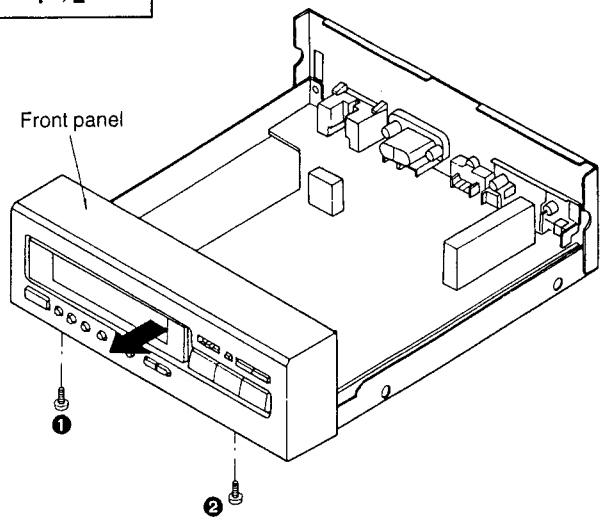
"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the Cabinet
Procedure 1	



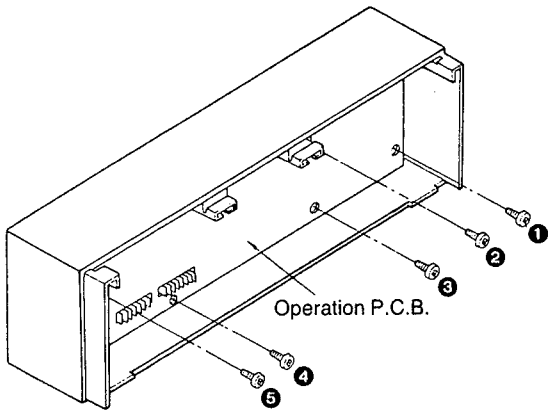
●Remove the 5 screws (❶~❺).

Ref. No. 2	Removal of the Front Panel
Procedure 1→2	



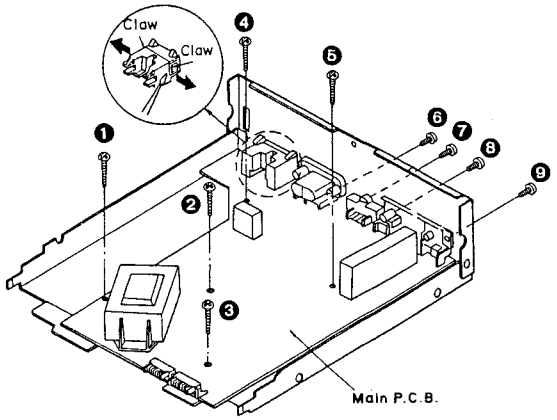
1. Remove the 2 screws (❶, ❷).
2. Remove the front panel in the direction of the arrow.

Ref. No. 3	Removal of the Operation P.C.B.
Procedure 1→2→3	



●Remove the 5 screws (❶~❺).

Ref. No. 4	Removal of the Main P.C.B.
Procedure 1→2→4	



1. Remove the 9 screws (❶~❾).
2. Release the 2 claws of AC outlet cover.

■ MEASUREMENTS AND ADJUSTMENTS

FM ADJUSTMENT

Control positions and equipment used

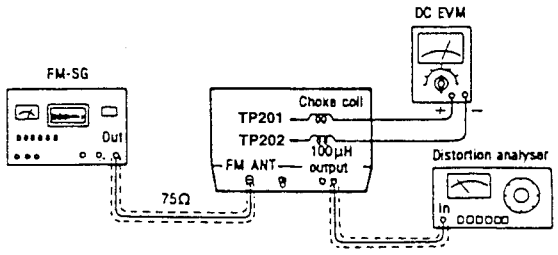
- FM signal generator(FM-SG)
- Stereo modulator
- Distortion analyser
- DC electronic voltmeter(EVM)
- Frequency counter
- Choke coil(100μH)
- Resistor(100kΩ)

Note: For Z201, Z251, Z321, L321, L322 and L324, they are supplied as adjusted parts. So, do not turn the cores of the parts. It is not necessary to adjust the AM circuit.

FM MONO DISTORTION ADJUSTMENT

1.Test equipment connection is shown in figure.
2.Set the unit to **"FM"** mode.
3.Set the radio frequency display and signal generator to **100.10MHz.**
4.Adjust the core of **T201** so that the voltage measured in signal mode is **0mV(0±20mV)** in 300mV range.
5.Adjust **T202** so that the distortion factor of L-CH and R-CH is minimized.
6.Repeat steps 4 and 5.
Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency 1kHz
Output level.....66dB



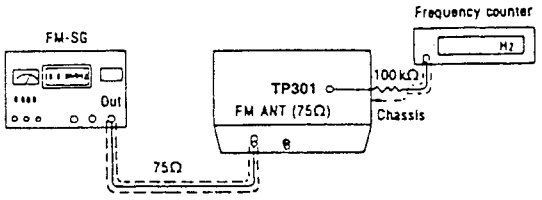
Output (L ch)= TP401
Output (R ch)= TP402

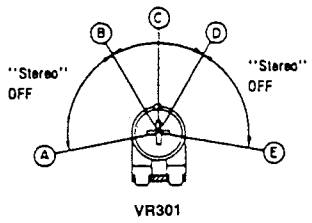
MPX VCO ADJUSTMENT

1.Test equipment connection is shown in figure.
2.Set the unit to **"on/auto"** position.
3.Set the radio frequency display and signal genarator to **100.10MHz.**
4.Adjust **VR301** for **19kHz±30Hz** on frequency counter reading.

USING ALTERNATE SYSTEM
1.Receive the stereo broadcast.
2.Adjust **VR301** until stereo indicator lights up. Fix the arm of **VR301** as shown in figure.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency 0kHz
Output level.....66dB

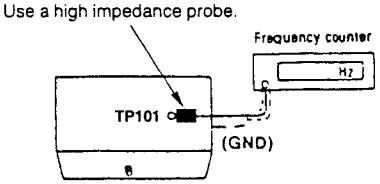




Ⓐ—Ⓑ,
Ⓓ—Ⓔ..... "Stereo" OFF positior
Ⓑ—Ⓓ..... "Stereo" ON position (Indicator lighting)
Ⓒ..... Adjust point of pilot circuit

PLL CLOCK FREQUENCY ADJUSTMENT

1.Test equipment connection is shown in figure.
2.Set the Power Switch to "OFF". (The indication "E" in the display will blink.)
3.Adjust **CT101** for **2,061,000 Hz±6 Hz** on frequency counter reading.



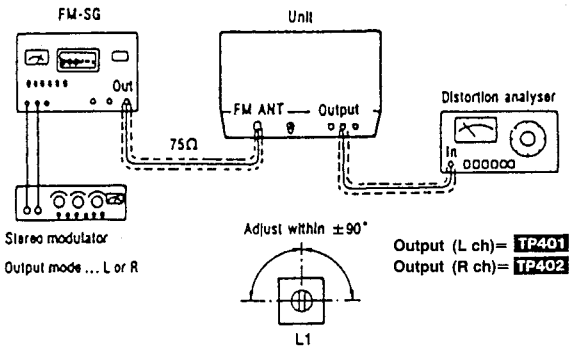
FM STEREO DISTORTION ADJUSTMENT
(El only)

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to **100.10MHz.**
4. Adjust **L1** so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

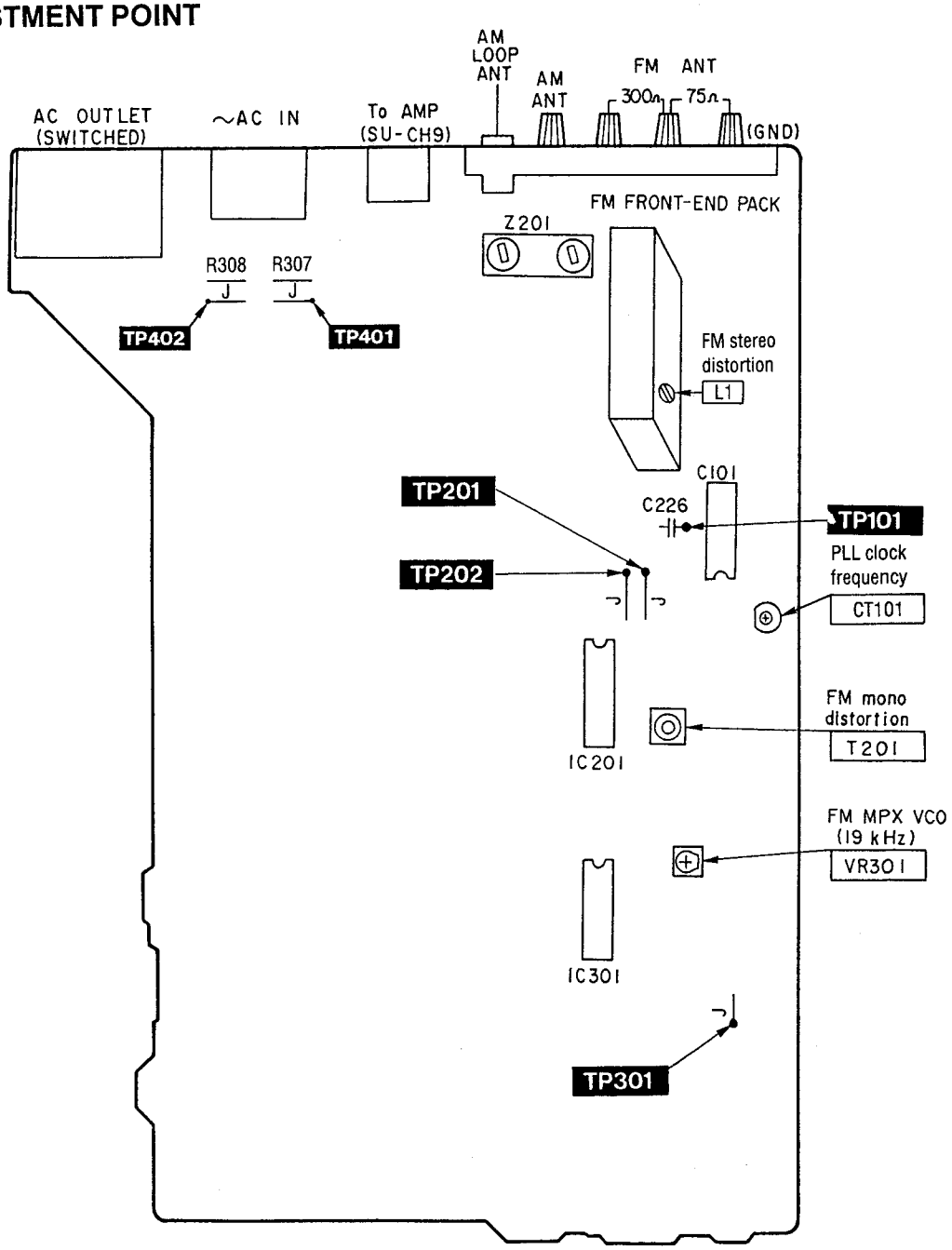
Notes:

1. The adjusting screwdriver used should be made of resin.
2. **L1** should be rotated no more 1/4 turn (90 deg.) on either side.

FM SIGNAL GENERATOR CONDITION
Modulation.....Stereo "L" mode or "R" mode 45%, Pilot 10%
Modulation frequency.....1kHz (Pilot 19kHz)
Output level.....66dB

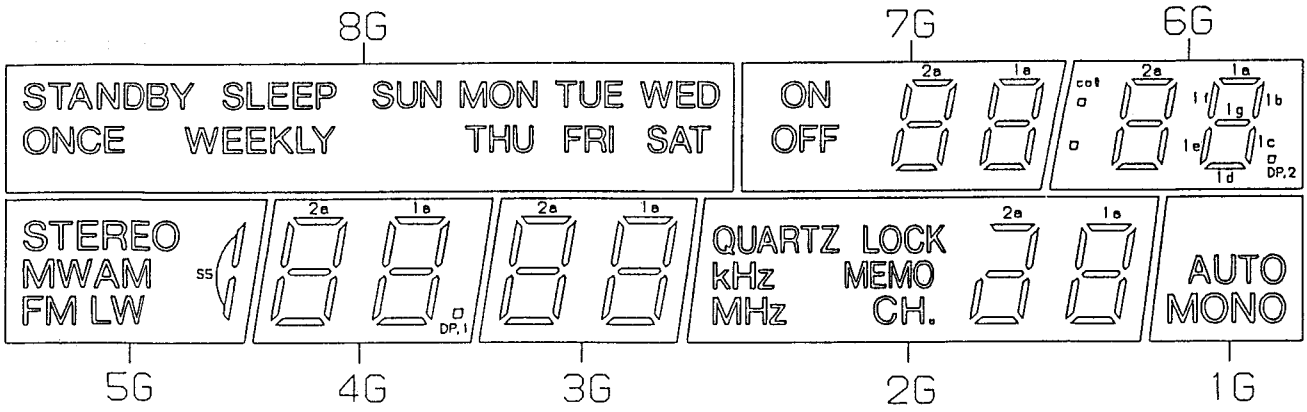


•ADJUSTMENT POINT



■ DESCRIPTION OF FL PANEL [FL901 (RSL0057-F)]

●GRID ASSIGNMENT



●PIN CONNECTION

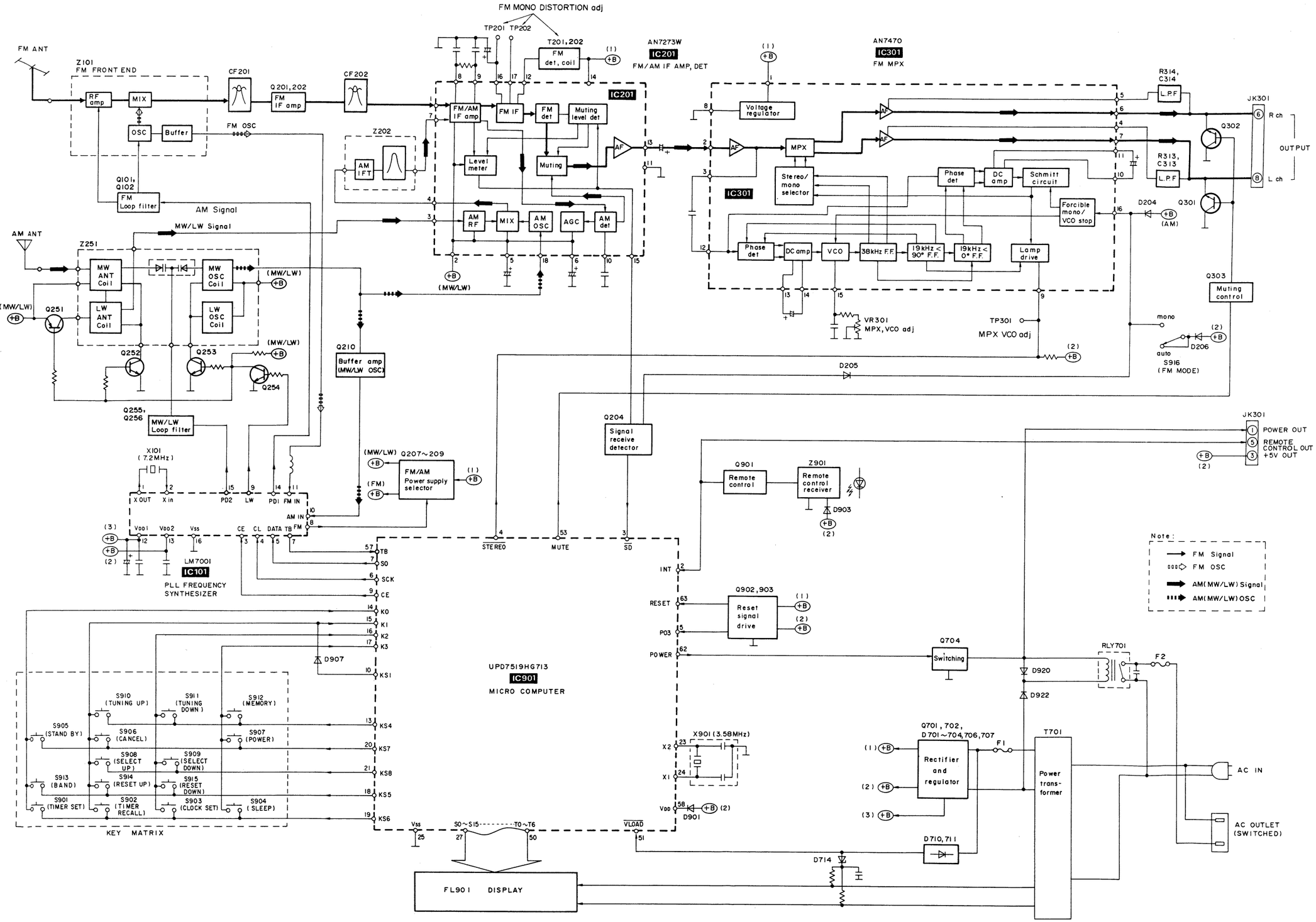
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	F1	F1	NP	NP	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	SG14	SG13	SG12	SG11	SG10	SG9	SG8	SG7	SG6	SG5	NC	C0	S0	S1	S2	S3	S4	S5	S6	NP	NP	F2	F2

1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) 1G~8G --- Grid

●ANODE CONNECTION

	8G	7G	6G	5G	4G	3G	2G	1G
S0	SLEEP	2d	2d	LW	2d	2d	CH.	-
S1	-	2e	2e	FM	2e	2e	MHz	-
S2	WEEKLY	2c	2c	AM	2c	2c	kHz	-
S3	-	2g	2g	-	2g	2g	2c	-
S4	ONCE	2f	2f	MW	2f	2f	MEMO	MONO
S5	-	2b	2b	/	2b	2b	2b	-
S6	STANDBY	2a	2a	STEREO	2a	2a	QUARTZ LOCK	AUTO
S7	-	ON	col	-	-	-	-	-
S8	WED	1d	1d	-	1d	1d	1d	-
S9	SAT	1e	1e	-	1e	1e	1e	-
S10	TUE	1c	1c	-	1c	1c	1c	-
S11	FRI	1g	1g	-	1g	1g	1g	-
S12	MON	1f	1f	-	1f	1f	1f	-
S13	THU	1b	1b	-	1b	1b	1b	-
S14	SUN	1a	1a	-	1a	1a	1a	-
S15	-	OFF	DP,2	-	DP,1	-	2a,d,e,g	-

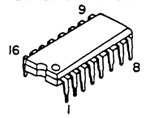
■ BLOCK DIAGRAM (for ST-CH9L)



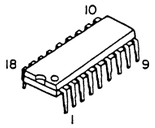
■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (for ST-CH9L) (Parts list on pages 28~30.)

•Terminal guide of IC's, transistors and diodes.

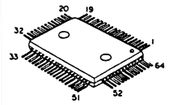
LM7001
SVIUPC1161C3



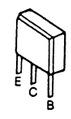
AN7273W



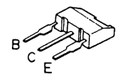
UPD7519HG713



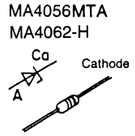
2SA1309A-R
2SC2785FE
2SC2787L
2SC3311A-Q



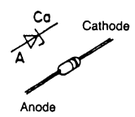
2SD1862QRTV6
DTA144ESTP



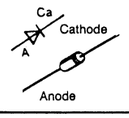
MA4039MTA
MA4056MTA
MA4062-H



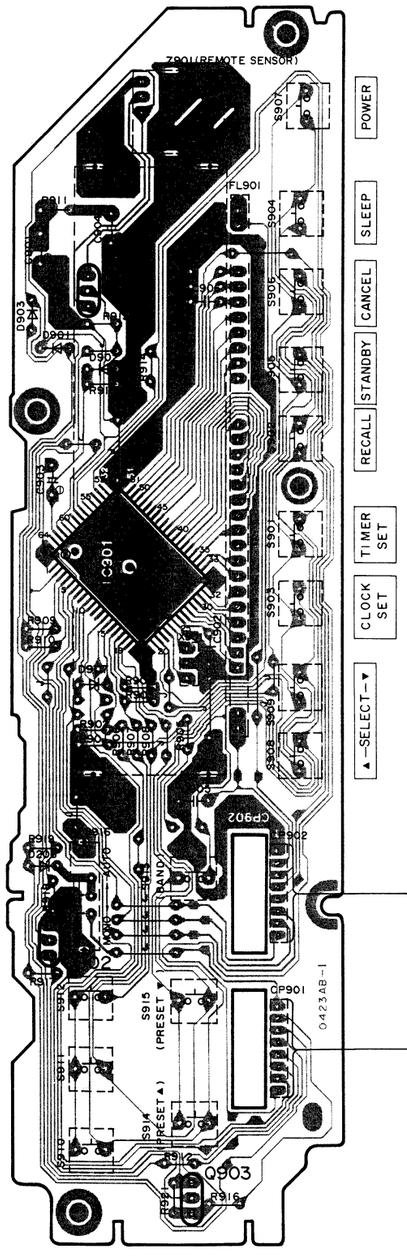
MA4150M



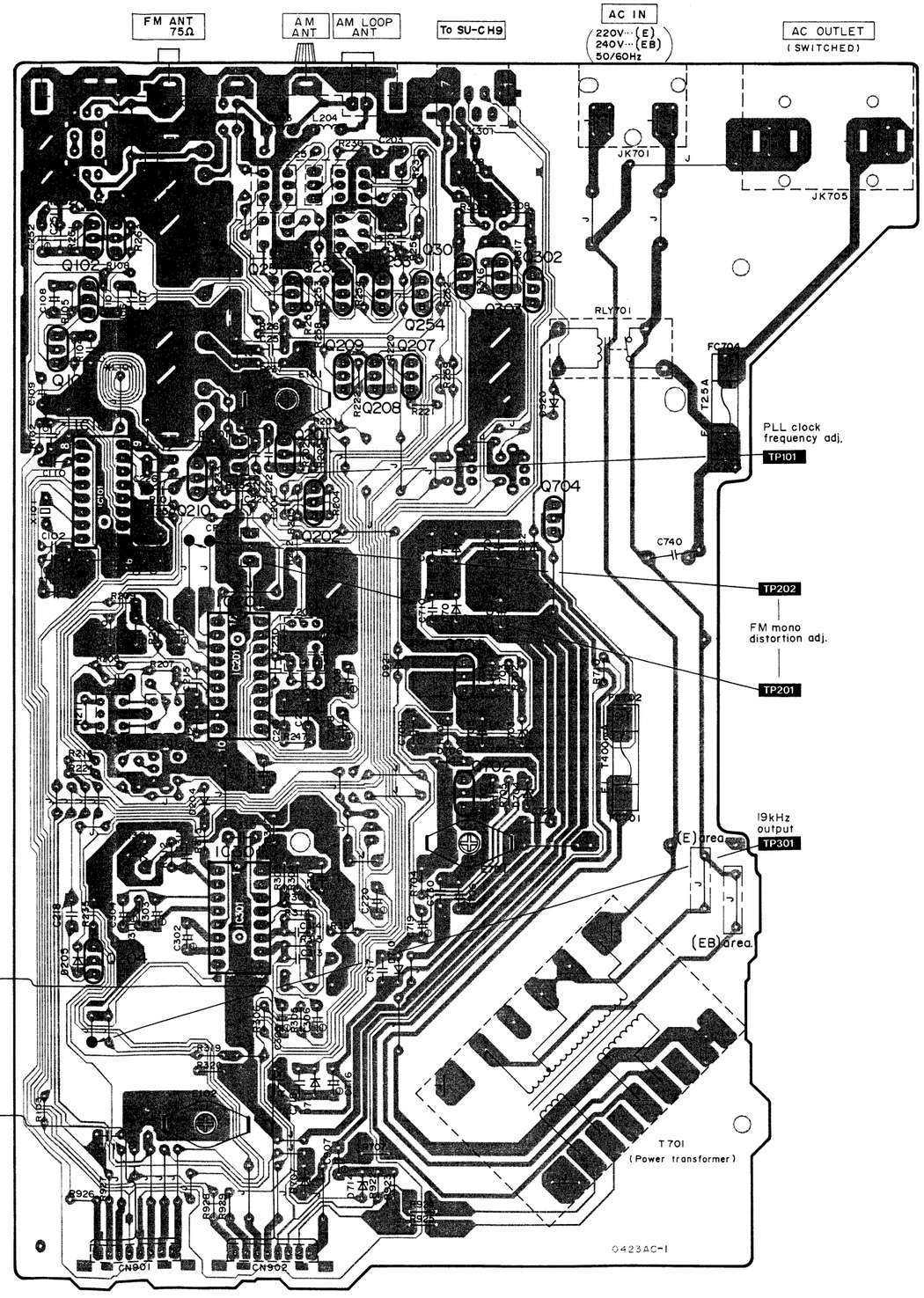
MA165
1SS291TA
1SR35200TB



B OPERATION P.C.B.



A MAIN P.C.B.



■ SCHEMATIC DIAGRAM (for ST-CH9L) (Parts list on pages 28~30.)

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- •S901 : Timer set switch.
- •S902 : Recall switch.
- •S903 : Clock set switch.
- •S904 : Sleep switch.
- •S905 : Standby switch.
- •S906 : Cancel switch.
- •S907 : Power switch.
- •S908, S909 : Timer/time select switch. **[S908: UP, S909: DOWN]**
- •S910, S911 : Tuning switch. **[S910: UP, S911: DOWN]**
- •S912 : Memory switch.
- •S913 : Band select switch.
- •S914, S915 : Preset channel switch. **[S914: UP, S915: DOWN]**
- •S916 : FM mode selector switch in **"AUTO"** position. **(AUTO/MONO)**

•Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

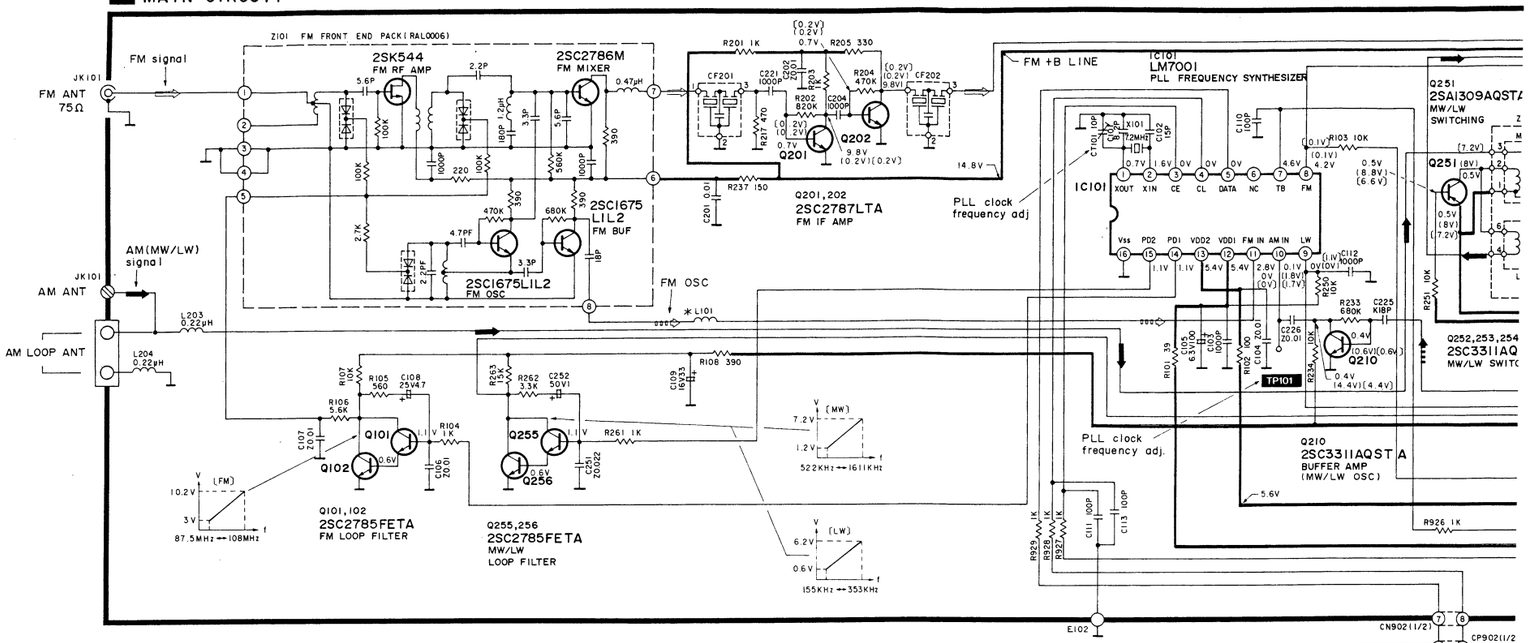
( ) : AM voltage, ▭ : MUTING voltage

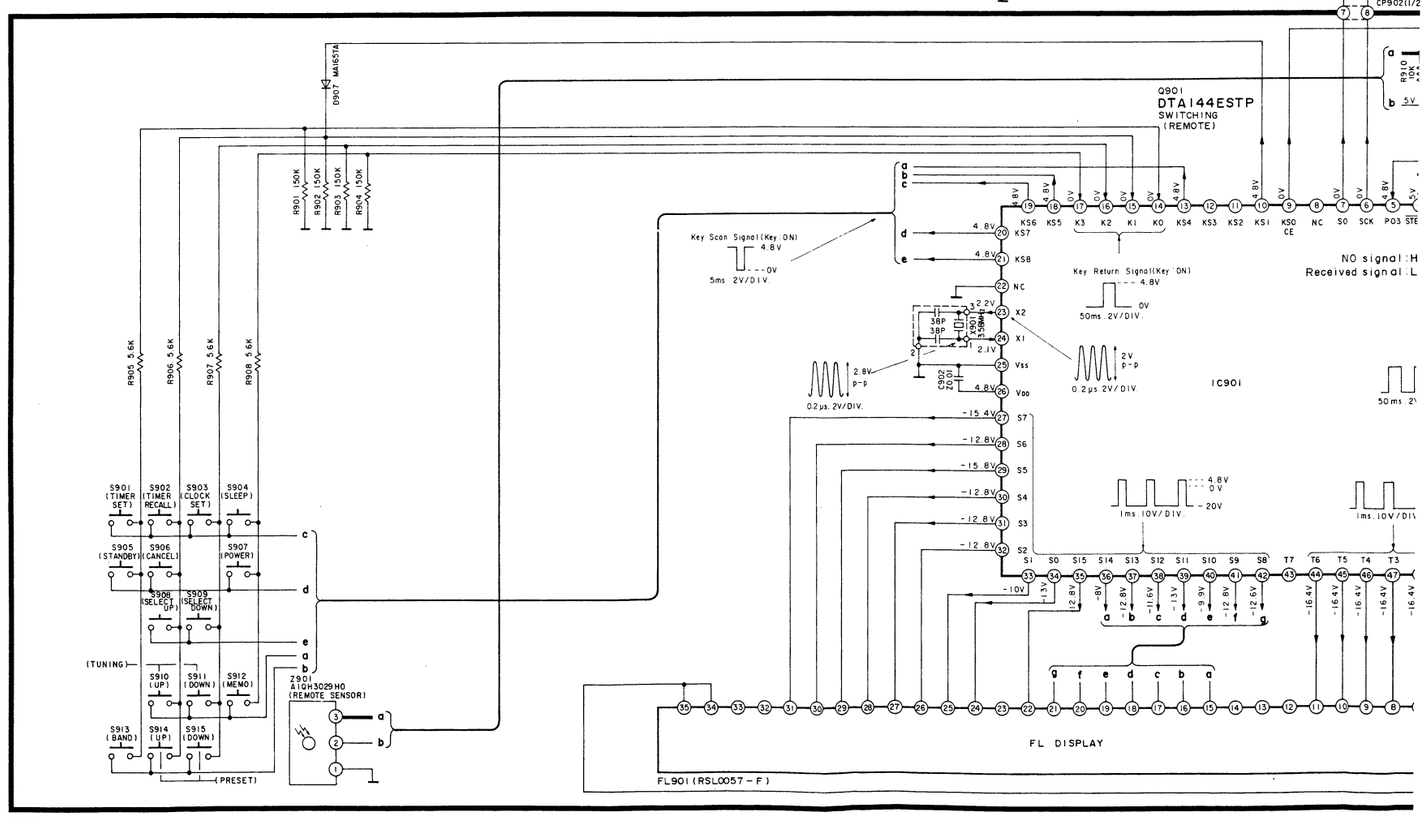
•——— Positive voltage lines
- - - - Negative voltage lines
□□□□▷ FM OSC
⇨ FM signal
■■■■▶ AM OSC
➡ AM signal
AF signal lines

•Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

•**Caution!**
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- •Cover the parts boxes made of plastics with aluminum coil.
- •Ground the soldering iron.
- •Put a conductive mat on the work table.
- •Do not touch the legs of IC or LSI with the fingers directly.

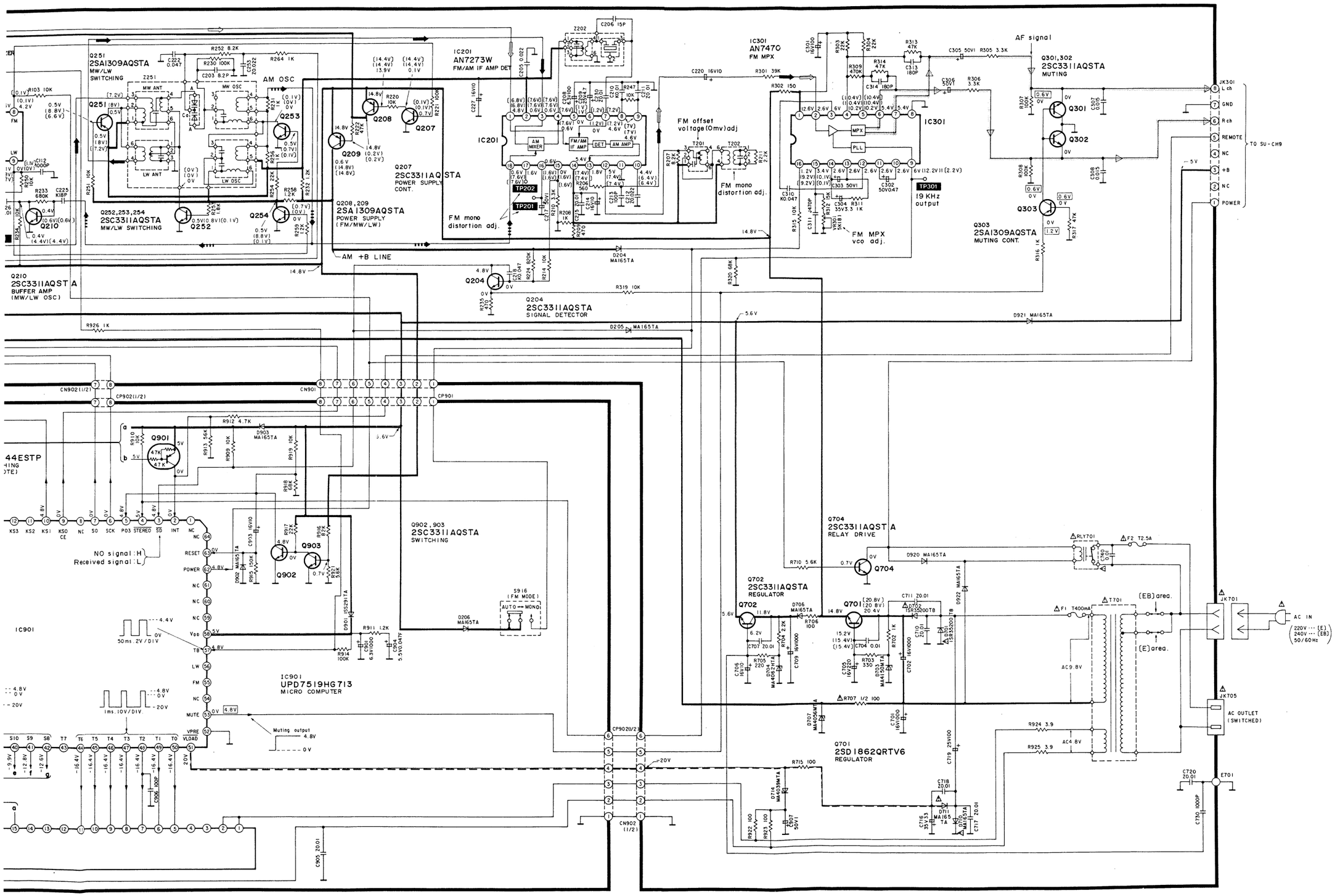
A MAIN CIRCUIT



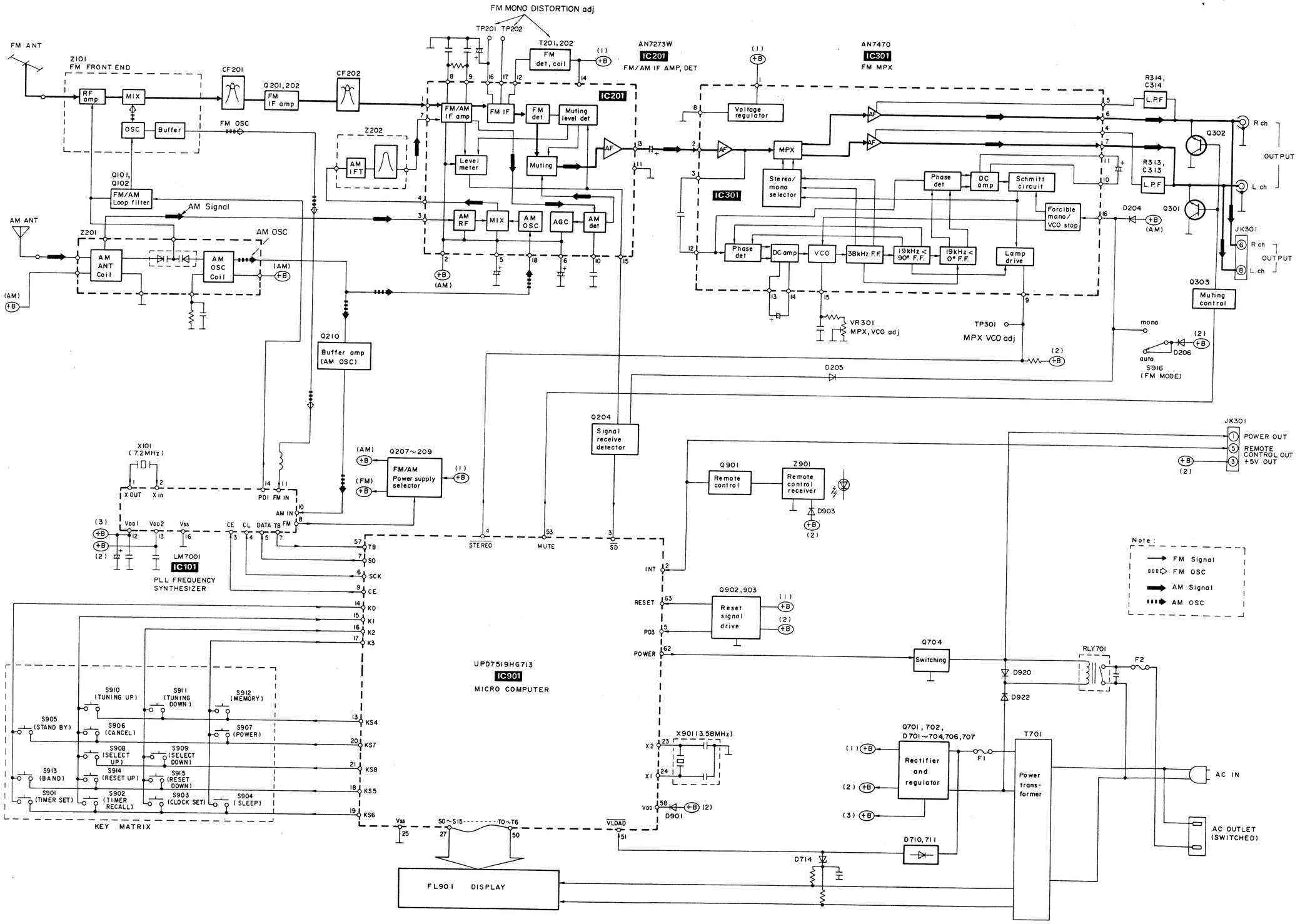


B OPERATION CIRCUIT

10 11 12 13 14 15 16 17 18 19



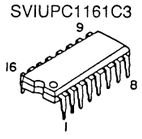
■ BLOCK DIAGRAM (for ST-CH9)



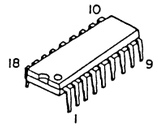
■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (for ST-CH9) (Parts list on pages 28~30.)

●Terminal guide of IC's, transistors and diodes.

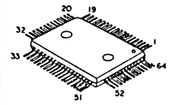
LM7001
SVIUPC1161C3



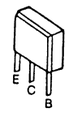
AN7273W



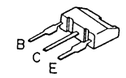
UPD7519HG713



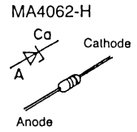
2SA1309A-R
2SC2785FE
2SC2787L
2SC3311A-Q



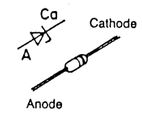
2SD1862QRTV6
DTA144ESTP



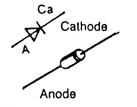
MA4039MTA
MA4056MTA
MA4062-H



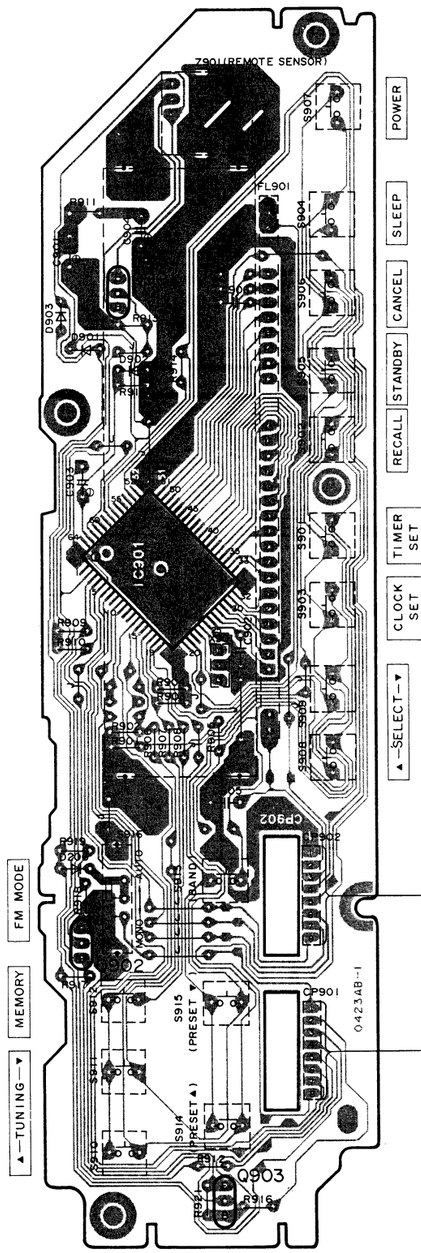
MA4150M



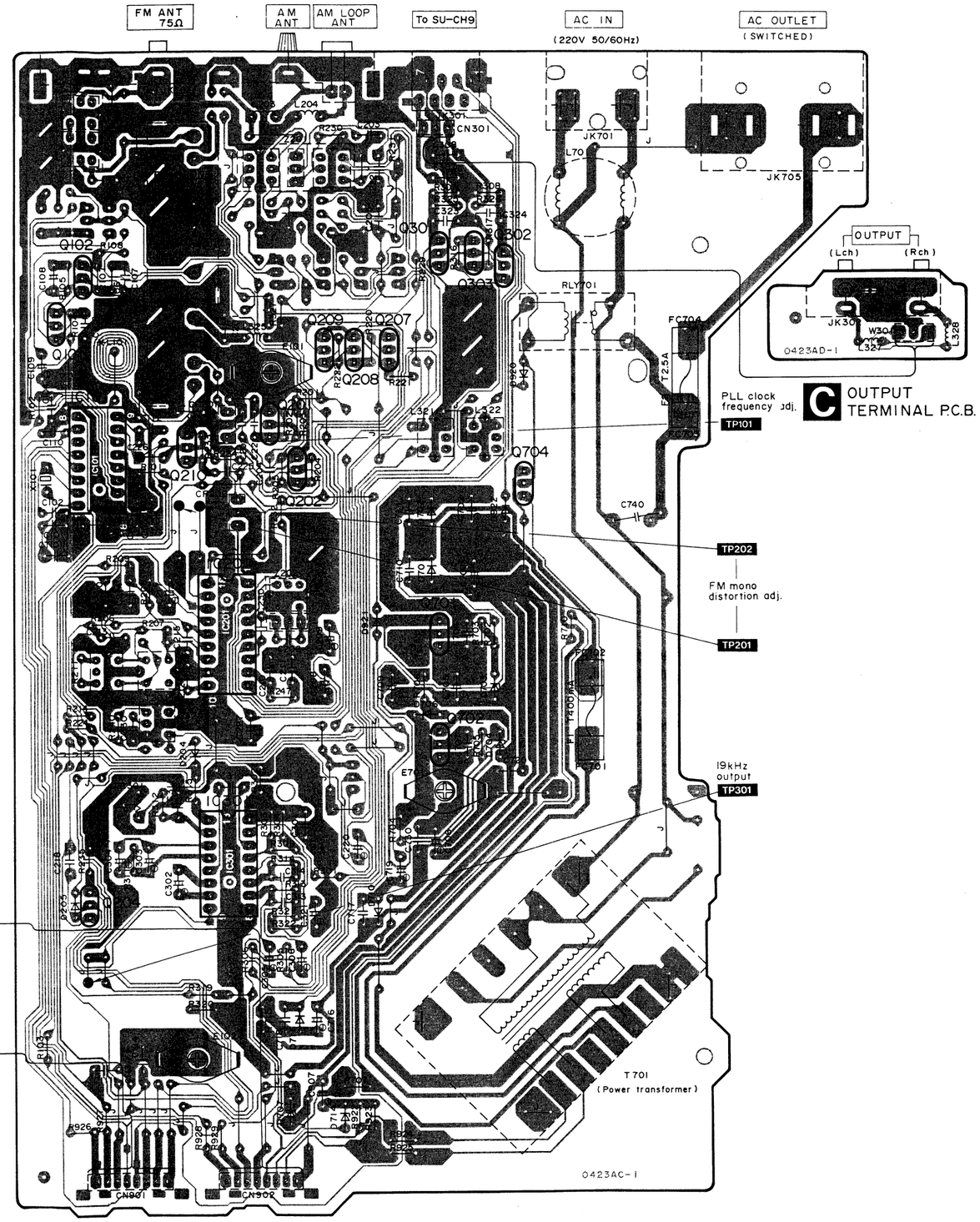
MA165
1SS291TA
1SR35200TB



B OPERATION P.C.B.



A MAIN P.C.B.



C OUTPUT TERMINAL P.C.B.

■ SCHEMATIC DIAGRAM (for ST-CH9) (Parts list on pages 28~30.)

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- •S901 : Timer set switch.
- •S902 : Recall switch.
- •S903 : Clock set switch.
- •S904 : Sleep switch.
- •S905 : Standby switch.
- •S906 : Cancel switch.
- •S907 : Power switch.
- •S908, S909 : Timer/time select switch. **[S908: UP, S909: DOWN]**
- •S910, S911 : Tuning switch. **[S910: UP, S911: DOWN]**
- •S912 : Memory switch.
- •S913 : Band select switch.
- •S914, S915 : Preset channel switch. **[S914: UP, S915: DOWN]**
- •S916 : FM mode selector switch in "**AUTO**" position. **(AUTO/MONO)**

•Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

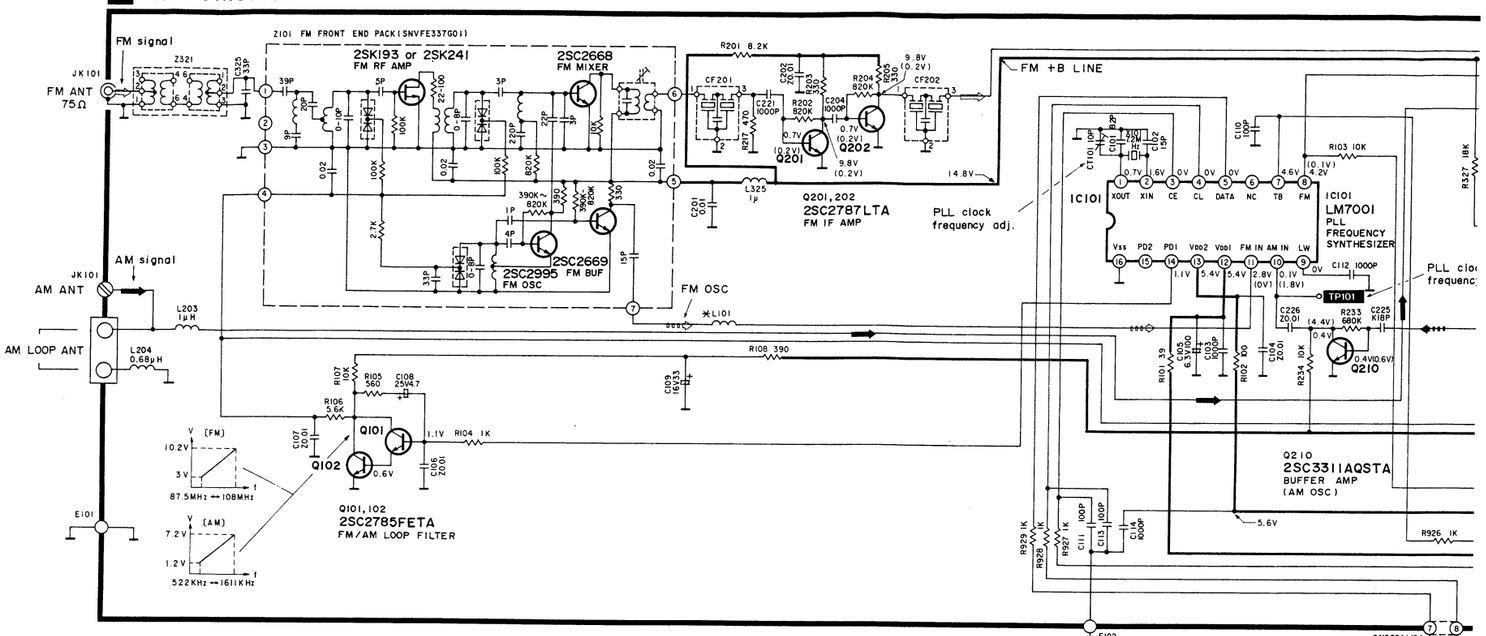
( ) : AM voltage [ ] : MUTING voltage

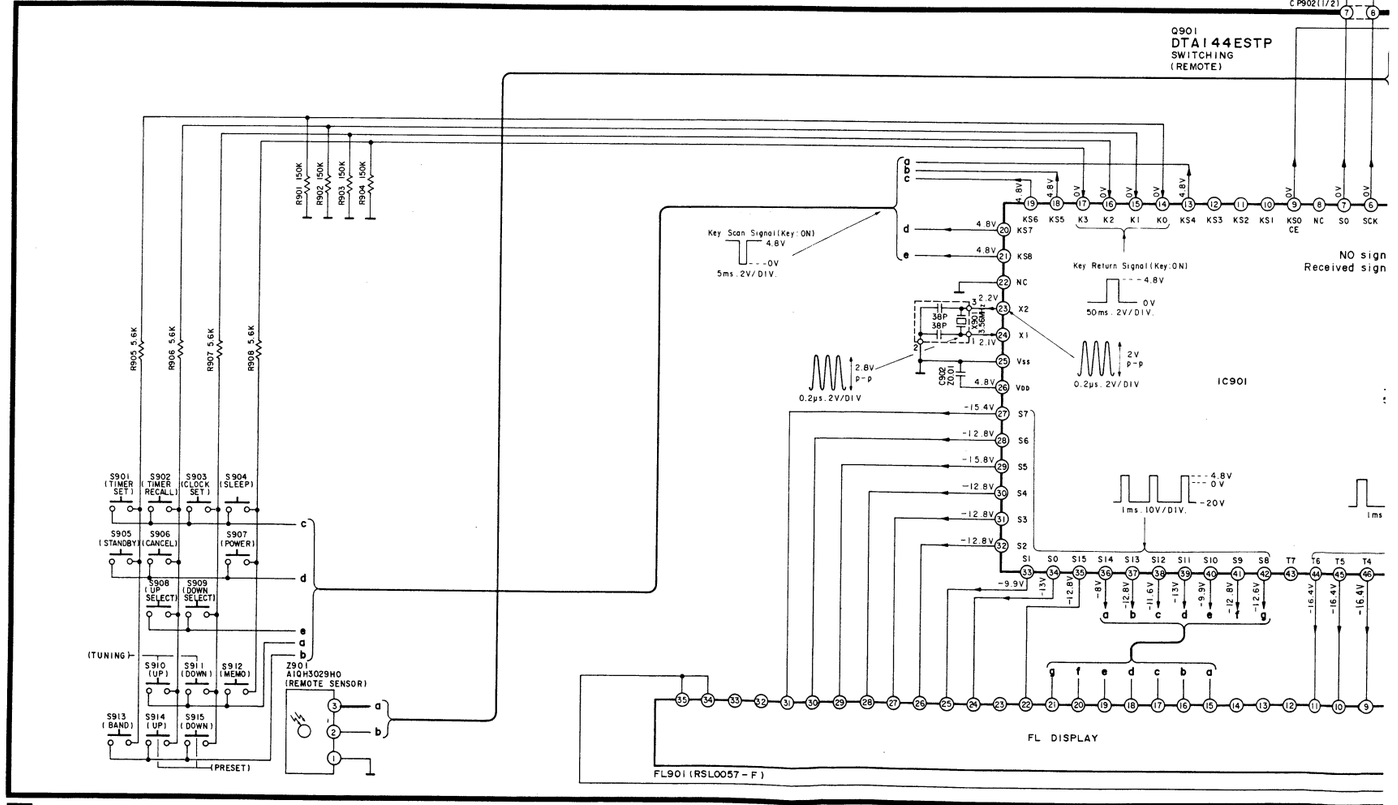
- Positive voltage lines
- Negative voltage lines
- FM OSC
- FM signal
- AM OSC
- AM signal
- AF signal lines

•Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

•**Caution!**
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- •Cover the parts boxes made of plastics with aluminum coil.
- •Ground the soldering iron.
- •Put a conductive mat on the work table.
- •Do not touch the legs of IC or LSI with the fingers directly.

A MAIN CIRCUIT





B OPERATION CIRCUIT

10 11 12 13 14 15 16 17 18 19

C OUTPUT TERMINAL CIRCUIT

IC101 LM7001 PLL FREQUENCY SYNTHESIZER

PLL clock frequency adj.

Z201 AM ANT COIL / AM OSC COIL

AM OSC

AM +B LINE

Q208, 209 2SA1309AQSTA POWER SUPPLY (FM/AM)

Q210 2SC3311AQSTA BUFFER AMP (AM OSC)

Q207 2SC3311AQSTA POWER SUPPLY CONT.

IC201 AN7273W FM/AM IF AMP DET

FM mono distortion adj.

FM offset voltage(0mv)adj

FM mono distortion adj.

IC301 AN7470 FM MPX

19KHz output

FM MPX vco adj.

AF signal

Q301,302 2SC3311AQSTA MUTING

Q303 2SA1309AQSTA MUTING CONT.

JK302 L ch / R ch — OUTPUT

JK301 Lch / GND / Rch / REMOTE / NC / +B / NC / POWER — TO SU-CH9

Q204 2SC3311AQSTA SIGNAL DETECTOR

Q901 DTA144ESTP SWITCHING (REMOTE)

NO signal : H
Received signal : L

Q902 2SC3311AQSTA SWITCHING

Q903 2SC3311QRSTA SWITCHING

IC901 UPD7519HG713 MICRO COMPUTER

Muting output 4.8V / 0V

Q704 2SC3311AQSTA RELAY DRIVE

Q702 2SC3311AQSTA REGULATOR

Q701 2SD1862QRTV6 REGULATOR

RLY701 F2 T2.5A F1 T400mA T701 L701 JK701 AC 220V (50/60Hz)

JK705 AC OUTLET (SWITCHED)

■ FUNCTIONS OF IC TERMINALS [IC901 (UPD7519HG713)]

Pin No.	Terminal Name	Symbol	Function
1	NC	—	———
2	INT0	INT	Remote-control input Leading edge
3	P01	SD	Station detector input Active Low
4	P02	STEREO	Stereo input Active Low
5	P03	—	Voltage detector input
6	P60	SCK	Serial clock output
7	P61	SO	Serial data ouput
8	—	—	———
9	P63	KS0, CE	Key source output and CE for serial transfer Active High
10 ~ 13	P50 ~ P53	KS1 ~ KS4	Key source output Active High
14 ~ 17	P10 ~ P13	K0 ~ K3	Key return signal input Active High
18 ~ 21	P40 ~ P43	KS5 ~ KS8	Key source output Active High
22	EVENT	NC	Non-Connection Connected to non-connection Vss
23 24	X2 X1	X2 X1	Crystal oscillator 3.6 MHz
25	Vss	GND	GND terminal
26	VDD	VDD	Power terminal 5 V±10%

Pin No.	Terminal Name	Symbol	Function
27 ~ 34	S7 ~ S0	S7 ~ S0	Segment output for FIP High withstand voltage output terminal
35 ~ 42	S15 ~ S8	S15 ~ S8	Segment output for FIP High withstand voltage output terminal
44 ~ 50	T6 ~ T0	T6 ~ T0	Digit output for FIP High withstand voltage output terminal
51	VLOAD	VLOAD	Pull-down resistance common terminal for FIP −30 V
52	VPRE	VPRE	Power supply for pre-driver
53	P30	MUTE	Muting output
54	P31	SDC	DTS selective output
55	P32	FM	FM selective output High...FM Low...AM
56	P33		HALT mode output Active High
57	TB		Band data input
58	VDD	VDD	Power terminal
59	NC	—	———
60	NC	—	———
61	NC	—	———
62	P23	POWER	Power output High...ON Low...OFF
63	RESET	RESET	Reset terminal
64	NC	—	———

■ REPLACEMENT PARTS LIST

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
*The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts whthout these indications can be used for all areas.
*"K" mark parts are used for black type only.
*"H" mark parts are used for gray type only.
Parts other than "K" and "H" marked are used for all colour types.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LM7001	IC, PLL FREQENCY	
IC201	AN7273W	IC, FM/AM IF	
IC301	SVIUPC1161C3	IC, FM MPX	
IC901	UPD7519HG713	IC, MICRO COMPUTER	
		TRANSISTOR(S)	
Q101, 102	2SC2785FE	TRANSISTOR	
Q201, 202	2SC2787L	TRANSISTOR	
Q204	2SC3311A-Q	TRANSISTOR	
Q207	2SC3311A-Q	TRANSISTOR	
Q208, 209	2SA1309A-R	TRANSISTOR	
Q210	2SC3311A-Q	TRANSISTOR	
Q251	2SA1309A-R	TRANSISTOR	(E, EB)
Q252-254	2SC3311A-Q	TRANSISTOR	(E, EB)
Q255, 256	2SC2785FE	TRANSISTOR	(E, EB)
Q301, 302	2SC3311A-Q	TRANSISTOR	
Q303	2SA1309A-R	TRANSISTOR	
Q701	2SD1862QRTV6	TRANSISTOR	
Q702	2SC3311A-Q	TRANSISTOR	
Q704	2SC3311A-Q	TRANSISTOR	
Q901	DTA144ESTP	TRANSISTOR	
Q902, 903	2SC3311A-Q	TRANSISTOR	
		DIODE(S)	
D204-206	MA165	DIODE	
D701, 702	1SR35200TB	DIODE	⚠
D703	MA4150M	DIODE	
D704	MA4062-H	DIODE	
D706	MA165	DIODE	
D707	MA4056MTA	DIODE	
D710, 711	MA165	DIODE	⚠
D714	MA4039MTA	DIODE	
D901	1SS291TA	DIODE	
D902, 903	MA165	DIODE	
D907	MA165	DIODE	(E, EB)
D920-922	MA165	DIODE	
		VARIABLE RESISTOR(S)	
VR301	EVNDXAA00B53	V. R, FM MPX VCO ADJ.	

Ref. No.	Part No.	Part Name & Description	Remarks
		COMPONENT COMBINATION(S)	
Z101	RAL0006	COMPONENT COMBINATION	(E, EB)
Z101	SNVFE337G01	COMPONENT COMBINATION	(EI)
Z201	RLA2Z001-T	COMPONENT COMBINATION	(EI)
Z202	SL17Z101-T	COMPONENT COMBINATION	
Z251	RLA6Z001-T	COMPONENT COMBINATION	(E, EB)
Z321	SLA4Z13-Z	COMPONENT COMBINATION	(EI)
Z901	A1QH3029H0	COMPONENT COMBINATION	
		COIL(S)	
L203	ELEPKR22MA	COIL	(E, EB)
L203	ELEPK1R0MA	COIL	(EI)
L204	ELEPKR22MA	COIL	(E, EB)
L204	ELEPKR68MA	COIL	(EI)
L321, 322	RLM2B003-K	COIL	(EI)
L324	SLM1B10-M	COIL	(EI)
L325	RLQZP1R0KT-Y	COIL	(EI)
L327, 328	RLQZP1R0KT-Y	COIL	(EI)
L701	RLQZ600M-W	COIL	⚠(EI)
		TRANSFORMER(S)	
T201	RLI4B002-Z	TRANSFORMER	
T202	RLI4B003-Z	TRANSFORMER	
T701	RTP1K4E011	POWER TRANSFORMER	⚠
		FILTER(S)	
CF201	RLFFETWNA01L	CERAMIC FILTER	(E, EB)
CF201	RLFFETNGA01L	CERAMIC FILTER	(EI)
CF202	RLFFETWNA01L	CERAMIC FILTER	(E, EB)
CF202	RLFFETNGA02L	CERAMIC FILTER	(EI)
		FUSE(S)	
F1	XBA2C04TB0	FUSE 250V 0.4A	⚠
F2	XBA2C25TB0	FUSE 250V 2.5A	⚠
		OSCILLATOR(S)	
X101	SVQ49U722-S	OSCILLATOR	
X901	EF0GC3584A4	OSCILLATOR	

Ref. No.	P
FL901	RSL0
S901	EVQ2
S902	EVQ2
S903	EVQ2
S904	EVQ2
S905	EVQ2
S906	EVQ2
S907	EVQ2
S908	EVQ2
S909	EVQ2
S910	EVQ2
S911	EVQ2
S912	EVQ2
S913	EVQ2
S914	EVQ2
S915	EVQ2
S916	RSS2

Notes : *
*

Ref. No.	P
R101	ERDS
R102	ERDS
R103	ERDS
R104	ERDS
R105	ERDS
R106	ERDS
R107	ERDS
R108	ERDS
R201	ERDS
R201	ERDS
R202	ERDS
R203	ERDS
R203	ERDS
R204	ERDS
R204	ERDS
R205	ERDS
R206	ERDS
R207	ERDS
R208	ERDS

MC-Service

Ref. No.	Part No.	Part Name & Description	Remarks
		DISPLAY TUBE	
FL901	RSL0057-F	DISPLAY TUBE	
		SWITCH(ES)	
S901	EVQ21405R	SW, TIMER SET	
S902	EVQ21405R	SW, RECALL	
S903	EVQ21405R	SW, CLOCK SET	
S904	EVQ21405R	SW, SLEEP	
S905	EVQ21405R	SW, STANDBY	
S906	EVQ21405R	SW, CANCEL	
S907	EVQ21405R	SW, POWER	
S908	EVQ21405R	SW, TIMER/SELECT(UP)	
S909	EVQ21405R	SW, TIMER/SELECT(DOWN)	
S910	EVQ21405R	SW, TUNING(UP)	
S911	EVQ21405R	SW, TUNING(DOWN)	
S912	EVQ21405R	SW, MEMORY	
S913	EVQ21405R	SW, BAND SELECTOR	
S914	EVQ21405R	SW, PRESET(UP)	
S915	EVQ21405R	SW, PRESET(DOWN)	
S916	RSS2A63ZA-H	SW, FM MODE	

Ref. No.	Part No.	Part Name & Description	Remarks
		JACKS	
JK101	RJH4202	ANT TERMINAL	
JK302	RJH3204N	OUT PUT TERMINAL	(EI)
JK701	SJS9236	AC INLET	⚠
JK705	RJS1A4902-B	AC OUTLET	⚠(E, EI)
JK705	RJS1A4802-B	AC OUTLET	⚠(EB)
CN301	RJS1A1703	SOCKET(3P)	(EI)
CN901, 902	RJU003K008M1	SOCKET(8P)	
CP901, 902	RJT003K008M1	CONNECTOR(8P)	
		VARIABLE CAPACITOR	
CT101	ECRHA010A41	TRIMER CAPACITOR	
		FUSE HOLDER(S)	
FC701-704	EYF52BC	FUSE HOLDER	⚠
		RELAY	
RLY701	RSY0005-1C	RELAY	⚠

Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R101	ERDS2TJ390	1/4W 39
R102	ERDS2TJ101	1/4W 100
R103	ERDS2TJ103	1/4W 10K
R104	ERDS2TJ102	1/4W 1K
R105	ERDS2TJ561	1/4W 560
R106	ERDS2TJ562	1/4W 5.6K
R107	ERDS2TJ103	1/4W 10K
R108	ERDS2TJ391	1/4W 390
R201	ERDS2TJ102	1/4W 1K (E, EB)
R201	ERDS2TJ822T	1/4W 8.2K (EI)
R202	ERDS2TJ824	1/4W 820K
R203	ERDS2TJ102	1/4W 1K (E, EB)
R203	ERDS2TJ331T	1/4W 330 (EI)
R204	ERDS2TJ474	1/4W 470K (E, EB)
R204	ERDS2TJ824T	1/4W 820K (EI)
R205	ERDS2TJ331	1/4W 330
R206	ERDS2TJ561	1/4W 560
R207	ERDS2TJ822	1/4W 8.2K
R208	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R209	ERDS2TJ471	1/4W 470
R210	ERDS2TJ332	1/4W 3.3K
R211	ERDS2TJ222	1/4W 2.2K
R214	ERDS2TJ103	1/4W 10K
R217	ERDS2TJ471	1/4W 470
R220	ERDS2TJ103	1/4W 10K
R221	ERDS2TJ104	1/4W 100K
R222	ERDS2TJ473	1/4W 47K
R224	ERDS2TJ824	1/4W 820K
R229	ERDS2TJ102T	1/4W 1K (EI)
R230	ERDS2TJ104	1/4W 100K
R231	ERDS2TJ102	1/4W 1K
R232	ERDS2TJ122	1/4W 1.2K
R233	ERDS2TJ684	1/4W 680K
R234	ERDS2TJ103	1/4W 10K
R235	ERDS2TJ471	1/4W 470
R237	ERDS2TJ151	1/4W 150 (E, EB)
R240	ERDS2TJ152T	1/4W 1.5K (EI)
R247	ERDS2TJ103	1/4W 10K
R250, 251	ERDS2TJ103	1/4W 10K (E, EB)
R252	ERDS2TJ822	1/4W 8.2K (E, EB)
R253	ERDS2TJ182	1/4W 1.8K (E, EB)

Ref. No.	Part No.	Values & Remarks
R254	ERDS2TJ223	1/4W 22K (E, EB)
R256	ERDS2TJ102	1/4W 1K (E, EB)
R258, 259	ERDS2TJ122	1/4W 1.2K (E, EB)
R261	ERDS2TJ102	1/4W 1K (E, EB)
R262	ERDS2TJ332	1/4W 3.3K (E, EB)
R263	ERDS2TJ153	1/4W 15K (E, EB)
R264	ERDS2TJ102	1/4W 1K (E, EB)
R301	ERDS2TJ393	1/4W 39K (E, EB)
R301	ERDS2TJ273T	1/4W 27K (EI)
R302	ERDS2TJ151	1/4W 150
R303, 304	ERDS2TJ223	1/4W 22K
R305, 306	ERDS2TJ332	1/4W 3.3K (E, EB)
R305, 306	ERDS2TJ272T	1/4W 2.7K (EI)
R307, 308	ERDS2TJ104	1/4W 100K (E, EB)
R307, 308	ERDS2TJ562T	1/4W 5.6K (EI)
R309	ERDS2TJ474	1/4W 470K (E, EB)
R309	ERDS2TJ154T	1/4W 150K (EI)
R311	ERDS2TJ102	1/4W 1K
R312	ERDS2TJ153	1/4W 15K
R313, 314	ERDS2TJ473	1/4W 47K
R315	ERDS2TJ103	1/4W 10K
R316	ERDS2TJ102	1/4W 1K

Ref. No.	Part No.	Values & Remarks
R317	ERDS2TJ473	1/4W 47K
R319	ERDS2TJ103	1/4W 10K
R320	ERDS2TJ683	1/4W 68K
R321, 322	ERDS2TJ153T	1/4W 15K (EI)
R325, 326	ERDS2TJ102T	1/4W 1K (EI)
R327	ERDS2TJ183T	1/4W 18K (EI)
R702	ERDS2TJ102	1/4W 1K
R703	ERDS2TJ331	1/4W 330
R704	ERDS2TJ222	1/4W 2.2K
R705	ERDS2TJ221	1/4W 220
R706	ERDS2TJ101	1/4W 100
R707	ERDS1FVJ101T	1/2W 100 ⚠
R710	ERDS2TJ562	1/4W 5.6K
R715	ERDS2TJ101	1/4W 100
R901-904	ERDS2TJ154	1/4W 150K
R905-908	ERDS2TJ562	1/4W 5.6K
R909, 910	ERDS2TJ103	1/4W 10K
R911	ERDS2TJ122	1/4W 1.2K
R912	ERDS2TJ472	1/4W 4.7K
R913	ERDS2TJ563	1/4W 56K
R914	ERDS2TJ104	1/4W 100K
R915	ERDS2TJ154	1/4W 150K
R916	ERDS2TJ823T	1/4W 82K
R917	ERDS2TJ223	1/4W 22K
R918	ERDS2TJ683	1/4W 68K
R919	ERDS2TJ103	1/4W 10K
R921	ERDS2TJ562	1/4W 5.6K
R922, 923	ERDS2TJ101	1/4W 100
R924, 925	ERDS2TJ3R9T	1/4W 3.9
R926-929	ERDS2TJ102	1/4W 1K
		CAPACITORS
C101	ECBT1H8R2KC5	50V 8.2P
C102	ECBT1H150JC5	50V 15P
C103	ECBT1H102KB5	50V 1000P
C104	ECBT1C103NS5	16V 0.01U
C105	ECEA0JU101B	6.3V 100U
C106	ECKR1H103ZF5	50V 0.01U
C107	ECBT1C103NS5	16V 0.01U
C108	ECEA25M4R7R	25V 4.7U
C109	ECEA1CU330	16V 33U
C110, 111	ECBT1H101KB5	50V 100P
C112	ECBT1H102KB5	50V 1000P
C113	ECBT1H101KB5	50V 100P
C114	ECBT1H101KB5	50V 100P (EI)
C201, 202	ECBT1C103NS5	16V 0.01U
C203	ECBT1H8R2KC5	50V 8.2P
C204	ECBT1H102KB5	50V 1000P
C205	ECKT1H223ZF	50V 0.022U
C206	ECBT1H150JC5	50V 15P
C208	ECEA0JU101B	6.3V 100U

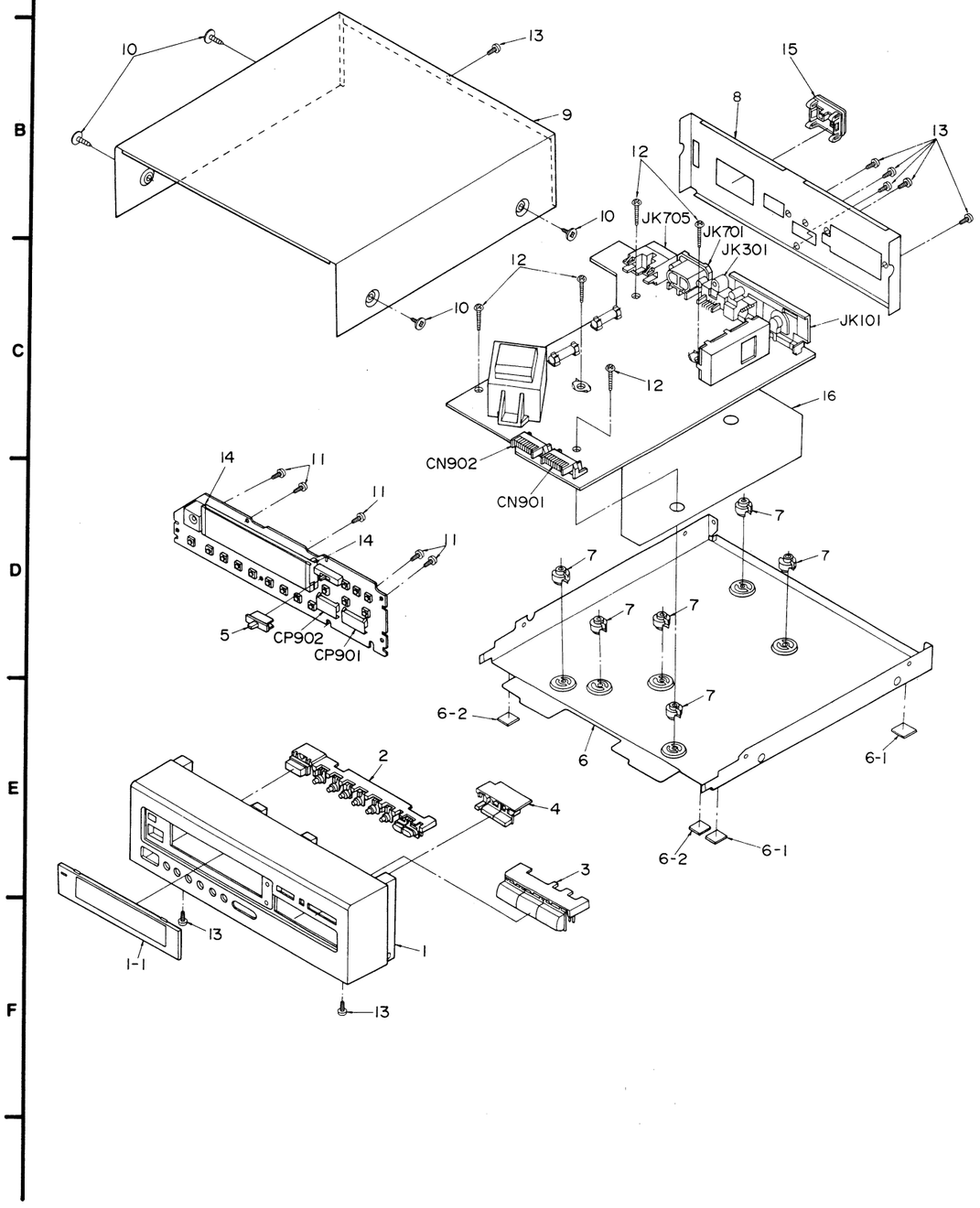
Ref. No.	Part No.	Values & Remarks
C209	ECEA1EK4R7	25V 4.7U
C210	ECFR1E103KR	25V 0.01U
C211	ECKR1H103ZF5	50V 0.01U
C212	ECBT1E223ZF	25V 0.022U
C213	ECBT1H101KB5	50V 100P
C214	ECEA1CK100B	16V 10U
C215	ECBT1C103NS5	16V 0.01U
C217	ECEA1HK010B	50V 1U
C218	ECFR1E473KR	25V 0.047U
C220	ECEA1CK100B	16V 10U
C221	ECBT1H102KB5	50V 1000P
C222	ECFR1E473KR	25V 0.047U
C225	ECBT1H180JC5	50V 18P
C226	ECKR1H103ZF5	50V 0.01U
C227	ECEA1CK100B	16V 10U
C230	ECBT1C103NS5	16V 0.01U
C251	ECBT1E223ZF	25V 0.022U (E, EB)
C252	ECEA1HK010B	50V 1U (E, EB)
C253	ECBT1E223ZF	25V 0.022U (E, EB)
C301	ECEA1CU101	16V 100U
C302	ECEA1HKR47	50V 0.47U
C303	ECEA1HK010B	50V 1U
C304	ECEA1VK3R3	35V 3.3U
C305, 306	ECEA1HK010B	50V 1U (E, EB)
C305, 306	ECEA1VK3R3B	35V 3.3U (EI)
C307, 308	ECFR1E153KR	25V 0.015U (E, EB)
C307, 308	ECFR1E392KR	25V 3900P (EI)
C310	ECFR1E473KR	25V 0.047U
C311	ECQP2A471JZT	100V 470P
C313, 314	ECBT1H181KB5	50V 180P (E, EB)
C313, 314	ECBT1H102KB5	50V 1000P (EI)
C321	ECEA1CK100B	16V 10U (EI)
C323, 324	ECFR1E332KR	25V 3300P (EI)
C325	ECBT1H330J5	50V 33P (EI)
C330	ECBT1H471KB5	50V 470P (EI)
C701, 702	ECEA1CU102B	16V 1000U
C704	ECKR1H103ZF5	50V 0.01U
C705	ECEA1CU221	16V 220U
C706	ECEA1CK100B	16V 10U
C707	ECKR1H103ZF5	50V 0.01U
C709	ECEA1CU102B	16V 1000U
C710, 711	ECKR1H103ZF5	50V 0.01U
C716	ECEA1VU330	35V 33U
C717, 718	ECKR1H103ZF5	50V 0.01U
C719	ECEA1EU101	25V 100U
C720	ECKR1H103ZF5	50V 0.01U
C730	ECBT1H102KB5	50V 1000P
C740	ECKWKC103PF2	400V 0.01U ⚠
C901	ECEA0JU102	6.3V 1000U
C902	ECBT1C103NS5	16V 0.01U
C903	ECEA1CK100B	16V 10U
C904	EECF5R5U473	5.5V 0.047F

Ref. No.	Part No.	Values & Remarks
C905	ECKR1H103ZF5	50V 0.01U
C906	ECBT1H101KB5	50V 100P
C907	ECEA1HK010B	50V 1U

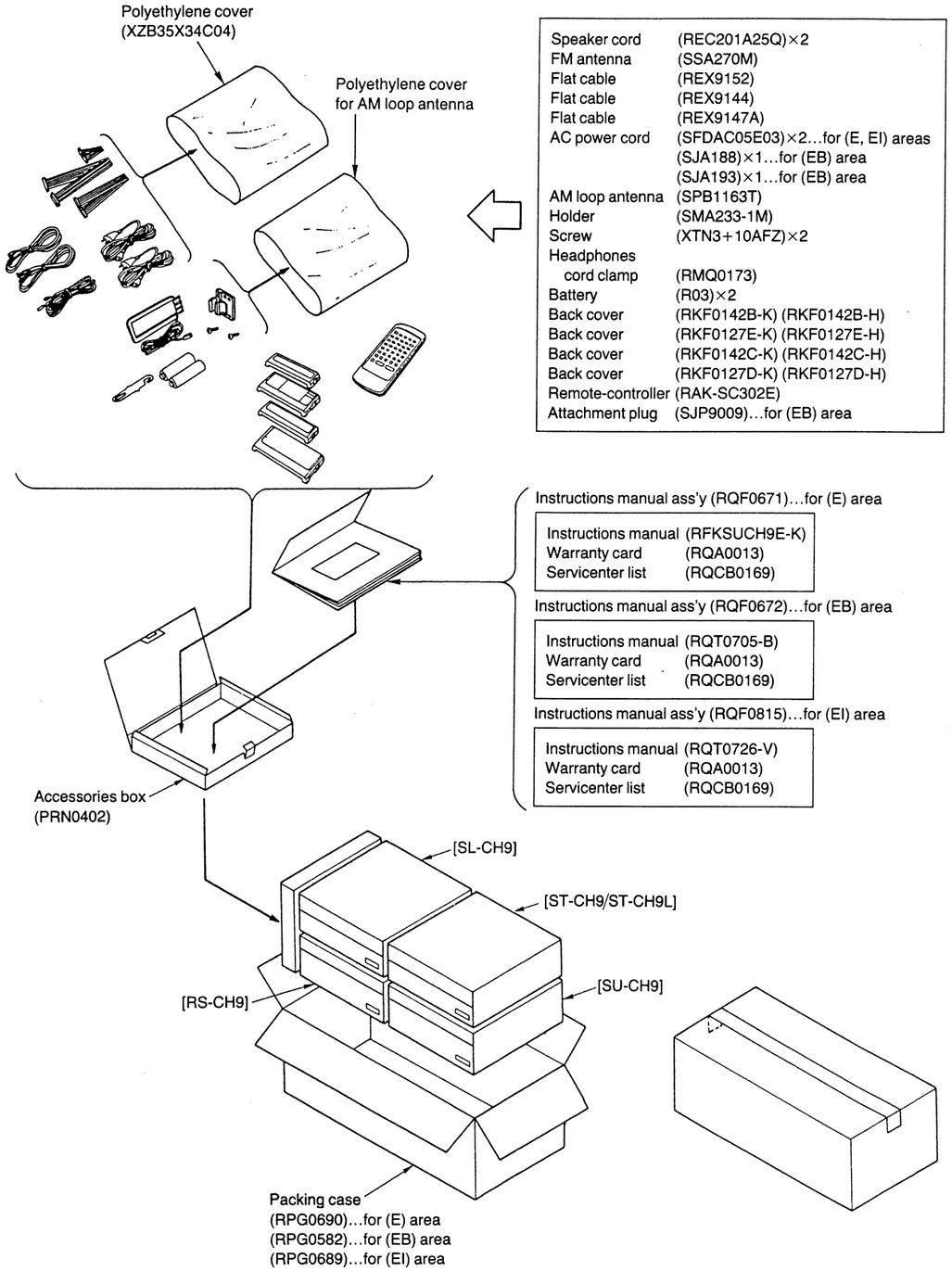
Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RFKGTCH9E-K	FRONT PANEL ASS'Y	K(E)
1	RFKGTCH9EB-H	FRONT PANEL ASS'Y	H(EB)
1	RFKGTCH9EI-K	FRONT PANEL ASS'Y	K(EI)
1-1	RKW0084C	FL PANEL	K(E, EI)
1-1	RKW0084B	FL PANEL	H(EB)
2	RGU0326-1	TIMER BUTTON	K(E, EI)
2	RGU0326-H1	TIMER BUTTON	H(EB)
3	RGU0327	PRESET BUTTON	
4	RGU0328	TUNING BUTTON	K(E, EI)
4	RGU0328-H	TUNING BUTTON	H(EB)
5	RGV0042	FM MODE SELECT KNOB	K(E, EI)
5	RGV0042-H	FM MODE SELECT KNOB	H(EB)
6	RFKJTCH9P-K	BOTTOM BOARD ASS'Y	
6-1	SHG1654	FOOT (REAR)	
6-2	RKA0043	FOOT (FRONT)	
7	SHE185-2	HOLDER	
8	RGR0088B-C	REAR PANEL	(E)
8	RGR0088C-B	REAR PANEL	(EB)
8	RGR0088D-A	REAR PANEL	(EI)
9	RKM0108-K	CABINET	K(E, EI)
9	RKM0108-H	CABINET	H(EB)
10	RHD30007	SCREW	
11	XTBS26+8J	SCREW	
12	XTB3+14J	SCREW	
13	XTBS3+8JFZ1	SCREW	
14	SMN2100	FL HOLDER	
15	RJS1A4902-A	AC OUTLET COVER	(E, EI)
15	RJS1A4802-A	AC OUTLET COVER	(EB)
16	RMZ0103	SHIELD PLATE	
		PACKING MATERIAL (SYSTEM)	
P1	RPG0690	PACKING CASE (SYSTEM)	(E)
P1	RPG0582	PACKING CASE (SYSTEM)	(EB)
P1	RPG0689	PACKING CASE (SYSTEM)	(EI)
P2	RPN0402	ACCESSORIES BOX	
P3	RPG0427	PACKING CASE (TUNER/CD)	
P4	RPG0426	PACKING CASE (AMP/DECK)	
P5	RPN0299A-2	PAD, FRONT (L) (TUNER/CD)	
P6	RPN0299B-2	PAD, FRONT (R) (TUNER/CD)	
P7	RPN0299C-2	PAD, REAR (L) (TUNER/CD)	
P8	RPN0299D-2	PAD, REAR (R) (TUNER/CD)	
P9	RPN0298A-2	PAD, FRONT (L) (AMP/DECK)	
P10	RPN0298B-2	PAD, FRONT (R) (AMP/DECK)	
P11	RPN0298C-2	PAD, REAR (L) (AMP/DECK)	
P12	RPN0298D-2	PAD, REAR (R) (AMP/DECK)	
P13	SPPS28	PROTECTION COVER	
P14	XZB35X34C04	POLYETHYLENE COVER	

Ref. No.	Part No.	Part Name & Description	Remarks
		ACCESSORIES (SYSTEM)	
A1	RQF0671	INSTRUCTIONS MANUAL ASS'Y	(E)
A1	RQF0672	INSTRUCTIONS MANUAL ASS'Y	(EB)
A1	RQF0815	INSTRUCTIONS MANUAL ASS'Y	(EI)
A1-1	RFKSUCH9E-K	INSTRUCTIONS MANUAL	(E)
A1-1	RQT0705-B	INSTRUCTIONS MANUAL	(EB)
A1-1	RQT0726-V	INSTRUCTIONS MANUAL	(EI)
A1-2	RQA0013	WARRANTY CARD	
A1-3	RQCB0169	SERVICENTOR LIST	
A2	RAK-SC302E	REMOTE-CONTROLLER	
A2-1	RKK0008	BATTERY COVER	
A3	REC201A25Q	SP CORD	
A4	REX9152	FLAT CABLE (TUNER AMP)	
A5	REX9144	FLAT CABLE (CD AMP)	
A6	REX9147A	FLAT CABLE (DECK AMP)	
A7	SFDAC05E03	AC POWER CORD	⚠(E, EI)
A7	SJA188	AC POWER CORD (AMP-TUNER)	⚠(EB)
A8	SJA193	AC POWER CORD (HOUSEHOLD)	⚠(EB)
A9	SPB1163T	AM LOOP ANTENNA	
A9-1	SMA233-1M	HOLDER	
A9-2	XTN3+10AFZ	SCREW	
A10	SSA270M	FM ANTENNA	
A11	RKF0127D-K	BACK COVER (AMP)	K(E, EI)
A11	RKF0127D-H	BACK COVER (AMP)	H(EB)
A12	RKF0127E-K	BACK COVER (DECK)	K(E, EI)
A12	RKF0127E-H	BACK COVER (DECK)	H(EB)
A13	RKF0142C-K	BACK COVER (CD)	K(E, EI)
A13	RKF0142C-H	BACK COVER (CD)	H(EB)
A14	RKF0142B-K	BACK COVER (TUNER)	K(E, EI)
A14	RKF0142B-H	BACK COVER (TUNER)	H(EB)
A15	RMQ0173	HEADPHONES CORD CLAMP	
A16	R03	BATTERY	
A17	RQCA0062	CAUTION NOTE for LOCK SHAFT	
A18	SJP9009	ATTACHMENT PLUG	⚠(EB)

■ EXPLODED VIEW



■ PACKING (for System: SC-CH9)



Speaker cord	(REC201A25Q)×2
FM antenna	(SSA270M)
Flat cable	(REX9152)
Flat cable	(REX9144)
Flat cable	(REX9147A)
AC power cord	(SFDAC05E03)×2...for (E, EI) areas
	(SJA188)×1...for (EB) area
	(SJA193)×1...for (EB) area
AM loop antenna	(SPB1163T)
Holder	(SMA233-1M)
Screw	(XTN3+10AFZ)×2
Headphones cord clamp	(RMQ0173)
Battery	(R03)×2
Back cover	(RKF0142B-K) (RKF0142B-H)
Back cover	(RKF0127E-K) (RKF0127E-H)
Back cover	(RKF0142C-K) (RKF0142C-H)
Back cover	(RKF0127D-K) (RKF0127D-H)
Remote-controller	(RAK-SC302E)
Attachment plug	(SJP9009)...for (EB) area

Instructions manual ass'y (RQF0671)...for (E) area

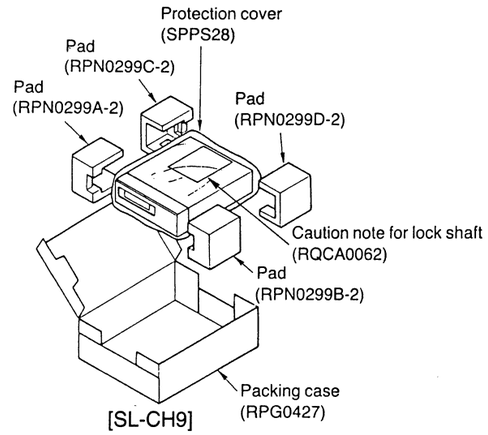
Instructions manual	(RFKSUCH9E-K)
Warranty card	(RQA0013)
Servicenter list	(RQCB0169)

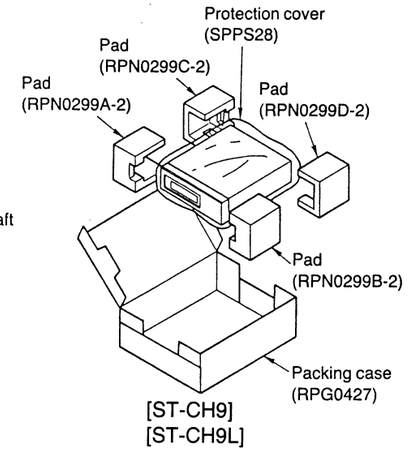
Instructions manual ass'y (RQF0672)...for (EB) area

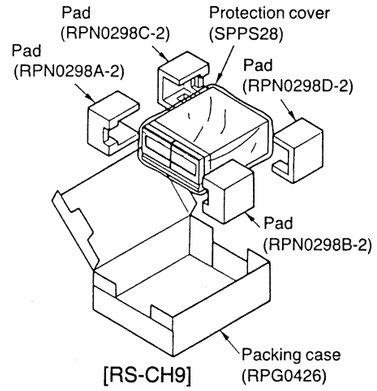
Instructions manual	(RQT0705-B)
Warranty card	(RQA0013)
Servicenter list	(RQCB0169)

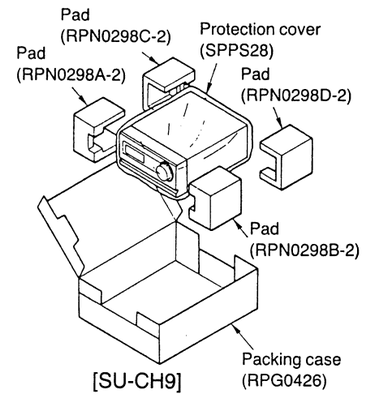
Instructions manual ass'y (RQF0815)...for (EI) area

Instructions manual	(RQT0726-V)
Warranty card	(RQA0013)
Servicenter list	(RQCB0169)









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F900606000 TW/YY/TN